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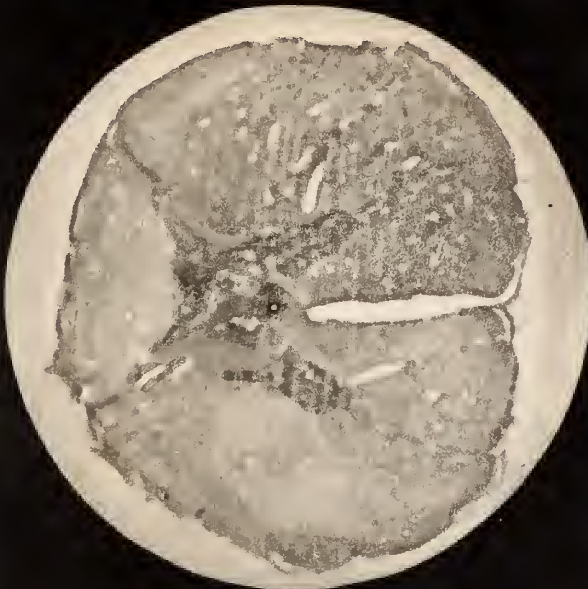

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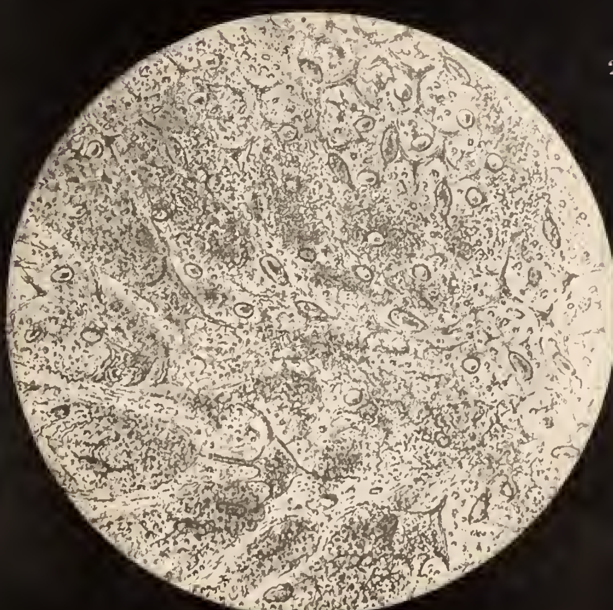

THE

NEW YORK

MEDICAL JOURNAL.

VOLUME III.

NEW YORK:

BAILLIÈRE BROTHERS, No. 520 BROADWAY.

1866.

John Medole, Printer,
193 *Pearl Street, N. Y.*

INDEX TO VOL. III.

NEW YORK
MEDICAL JOURNAL,

A MONTHLY RECORD OF MEDICINE AND THE COLLATERAL SCIENCES.

APRIL, 1866.

ORIGINAL COMMUNICATIONS.

On the Pathology of Reflex Paralysis, and its Relation to the Sympathetic System. By M. GONZALEZ ECHEVERRIA, M.D., Physician to the Charity Hospital, New York.

[WITH TWO PLATES.]

The generic term *reflex*, used here, comprises that peculiar and extensive class of paralyses called functional, idiopathic, asthenic, and peripheral. It may be proper to add, that this name does not imply contraction in the blood vessels of the spinal cord as a necessary initial cause of the paralysis, nor subsequent absence of structural change in the nervous system as its effect. I keep the word, because there is no advantage in coining a new one when that already created suffices, provided we define its meaning to guard against looseness of application. Indeed, there should be no objection to call such form of paralysis *reflex*, for several of its varieties attending fever, pneumonia, anæmia, intoxication, etc., could not properly be looked upon as *peripheral*, in the true sense of this expression; while to name them *functional* is obviously in opposition to our knowledge that material modification in the organs is essential to disease. Therefore, as already intimated, disregarding the idea of vascular contraction and absence of lesion in the spinal cord—certainly not conveyed by the term reflex—this name is probably the most appropriate to assign to these varieties of paralysis, inasmuch as their several causes reflect upon the spinal cord, ganglia and nerves, the lesions hereafter to be described.

The elaborate and able manner in which Dr. S. Weir Mitchell has discussed, in late numbers of this Journal,[1] the different theories on reflex paralysis, which he prefers to call "Paralysis from Peripheral Irritation," renders superfluous any repeated comments on their value. The views to be presented in this paper are based, not so much upon an attentive investigation of the symptoms, as on a careful histological examination of the nervous system, agreeing in their results with other similar facts which I have gathered from the writings of accurate observers.

It is not proved, as Dr. Mitchell says, that nearly every cited example of reflex paralysis has been free from lesion of the nervous centres, since the statement is not substantiated by any microscopical examination. The instance of paraplegia related by Dr. Gull[2] in no manner settles the question, for although no spinal alteration was discovered with the microscope, yet the brain, medulla oblongata and affected nerves were not examined. The case, accordingly, remains with a dubious significance. The doubt with regard to it is furthermore strengthened, if we take into account that paraplegia may be symptomatic of cerebral lesion. This important phenomenon has not attracted the attention it deserves—its occurrence being frequently denied, notwithstanding its acknowledged existence by Serres, Esquirol, Durand-Fardel, Cheyne, Earle, Watson, Romberg, and several no less reliable authorities. Abercrombie mentions one of the most positive proofs of cerebral paraplegia in a case communicated by Dr. Christison. The patient had intense pain of the left temple, accompanied by deafness of the left ear, squinting of the left eye, and paraplegia. On cadaveric inspection there was found a thickening of the dura mater, with adhesions to the arachnoid on the temporal fossa and above the pars pe-

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[1] N. Y. Medical Journal, Vol. ii., Nos. 11, 12.

[2] Guy's Hospital Reports, Vol. iv., Third Series, Case xvii., p. 174.

trosa of the temporal bone, involving the sixth and seventh nerves. There was a tubercle in the right hemisphere, and a small cyst in the right corpus striatum. A portion in the posterior cornu of the right ventricle appeared as if it had been obliterated by adhesion. *No appearance of disease could be detected in the contents of the spinal canal.*[1]

Dr. J. V. Laborde has recorded a case of amaurosis and paralysis of the vagus nerve, with incomplete paraplegia produced by two cysts in the brain.[2]

Dr. Hughlings Jackson[3] has also described several instances of amaurosis and paraplegia, the former being the result of reflex action set up by the disease of the cord which produces the paraplegia, according to the explanation given by Brown-Séquard. Recently, Dr. J. W. Ogle, in a very interesting paper "On primary Carcinoma of the Brain," p. 4, describes a case in which paraplegic symptoms, loss of memory, difficulty in speech, and dysphagia, existed with a large fungoid growth in the left cerebral hemisphere. Unfortunately, the cord was not examined in this instance. I have lately seen, in consultation with Dr. G. A. Sabine, a girl sixteen years of age who, five years ago, after repeated vomiting and headache, gradually became amaurotic and paraplegic. She is now quite blind. There is atrophy of the optic nerves, enlarged pupils, marked dysphagia, without impediment in speech, and she still complains of the headache. The loss of power in the lower limbs has gradually progressed, with diminished temperature, but without anæsthesia or perceptible muscular atrophy. The arms are free from trouble, with the exception of a slight tingling, occasionally, at the end of the fingers. There is no pain along the spine; the intellectual faculties and general nutrition are failing. We have been led to suspect a cerebral tumor as the cause of the above symptoms.

There is, however, an instance of paralysis from cold and wet in which Dr. C. Hanfield Jones[4] made a microscopical examina-

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1 Abercrombie, Diseases of the Brain and the Spinal Cord, Phila., 1836, p. 353.

2 Union Médicale, No. 137, 1859.

3 "Illustrations of Diseases of the Nervous System," in Clinical Lectures and Reports of the London Hospital. Vol. i., 1864, p. 376.

4 British Medical Journal, 1859, p. 309.

tion of parts of the spinal cord without detecting any trace of organic alteration.

"J. Edwards, aged thirty, young looking, was admitted October 11th, 1859, under Dr. Sibson. Four months ago he was in wet grass all the morning. His legs became stiff the next morning, and his knees weak; he felt as if he were standing on pins. The arms also became affected, but only numb. Subsequently his mastication powers and his voice became impaired; he had double vision for about a month, and afterwards singing in his ears. On admission, he was observed to lift the jaw with his hand in speaking, and to shoot out his head when he lies down. He walks slowly, lifting his feet. When he gets on his bed he does it in a series of jerks, and then falls flat. Both hands are sensitive. The pupils act. He has vomiting. Pulse 64; respiration 32.

"Oct. 14th.—He complains of pain at the back of the head, and of the arms being more powerless. He can not open and shut his mouth without the help of his hand, when lying in bed. The power of deglutition is impaired. Memory is perfect.

"Oct. 17th.—When his wife came into the ward he went to meet her, pointed to his throat, and nearly fainted. He became excessively pallid; his skin was hot and covered with sweat; pulse, 120. Soon afterwards he sank and died. He had taken iron and quinine, and improved somewhat for a time."

"Post mortem examination: the body was spare, of medium height. The thymus gland was enlarged; it weighed 537 grains. The heart was full of fluid blood, and healthy. The lungs were healthy. The liver, kidneys, and spleen were immensely congested, but firm and quite normal in appearance. The stomach was almost empty. The intestines were empty and contracted. The superficial vessels of the brain were slightly congested. The brain substance was firm; the gray matter was darker than usual; the vascular points were more numerous and evident. The lateral ventricles contained a little serum. The choroid plexus were rather congested. Nothing abnormal was found in the brain; all the parts were carefully examined. The spinal cord appeared to be firmer than usual in the parts corresponding to the lower dorsal and upper lumbar regions; the upper part was much softer than this, but sections of both these portions revealed nothing unnatural in appearance or worthy of remark. Mr. Gascoyne, who conducted the autopsy, informs me that he considered the softening as a post mortem change. Dr. Sibson and I carefully examined portions of the spinal cord and pons varoli the next day under the microscope, but we could discover no organic morbid change; there was no alterations of the coats of the minute vessels, nor glomeruli. The kidneys were also examined microscopically, and found healthy. The vagi, the fifth pair, the spinal roots, the nerves in the paralyzed limbs, and the ganglionic system were not included in the above examination."

Leudet[1] reports a case of asphyxia by oxyde of carbon, inducing at first paralysis of the extensor muscles, and afterward complete loss of movement of the right lower limb. soon gaining the left lower limb and the upper extremities. On post mortem examination, the spinal cord and brain appeared undamaged, but there were very evident signs of neuritis in the right sciatic nerve. It will be seen, in the two instances of paralysis from cold and wet (Cases i. and vi.) I shall presently relate, that there were no corpuscles of exudation in the cord, and yet its structure had undergone an alteration, which could not be discovered in many parts by microscopic examination with a low magnifying power. Prior to the late important researches of Lockhart Clarke, the spinal cord had been searched in cases of tetanus without detecting changes in its structure; however, the lesions and alterations of structure are numerous in the organ, but, as shown by the skillful anatomist, appreciable only under glasses of considerable magnifying power. Mr. Lockhart Clarke has, in other instances of paralysis, described degenerations in the columns of the cord, although they appeared healthy under low power.

There still remains another case of general paralysis following pneumonia, the sequela of intermittent fever and rheumatism, in which no lesion of the nervous centres was detected with the microscope. Gubler is indebted to Landry for the

[1] Arch. Gén. de Méd., Tome ix., 1857, p. 476.

case which he reports in the Archives Générales de Médecine, 1860, Tome ii., p. 718.[1] A man aged 52, previous to his admission into Beaujon Hospital, had pneumonia, and was three times bled, blistered, and kept without food for eighteen days. Emetics were also administered. The patient had a very tedious convalescence, and instead of recovering strength grew weaker and weaker. At length he was seized with formication in the limbs, trunk and face; afterwards the legs became weak and could not support him, nor could he direct their movements, being otherwise incapable of elevating his arms above a horizontal line with the body. Respiration became also laborious, and mastication and deglutition difficult. There was no trembling nor spasms in the limbs, neither loss of control of the sphincters. Muscular irritability and nervous excitability remained undamaged, but the temperature was lowered in the limbs and sensibility deadened in their extremities. There was no fever; pulse 85 to 90, small and soft. He had a cough, with mucous expectoration, and sweating. The paralytic symptoms ran their course in eight days, at the end of which period the patient had constriction of the larynx, with excessive dyspnœa, feebleness of speech, and cyanotic face and neck covered with cold perspiration. At last, after attempting to take some nourishment, he turned pale, collapsed, and died.

On post mortem examination, the rigor mortis was found persisting about forty hours after death (month of June). The sinuses and veins in the cerebro-spinal membranes were filled with blood. No visible or microscopical change was detected in the nervous centres. All portions were examined with the greatest care, after being prepared in very thin sections. The microscopical investigation was made by Bourguignon, Gubler, Landry, and Robin. The lungs were in a state of splenization and of engorgement, without any tuberculous deposit. The other viscera were not examined. This example, certainly, affords every guaranty as to the non-existence of lesions in the nervous centres, although it is silent as to the condition of the ganglionic system. However, the general asthenic

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[1] Des Paralysies dans leurs Rapports avec les Maladies Aigues, etc. See, also, De la Paralysie Amyotrophique consécutive aux Maladies Aigues. Mém. de la Société de Biologie, Tome iii., 3ème Série, 1861.

symptoms, or *amyosthenia*, as Gubler calls it, which ended the disease, plainly point out their origin to be the exhausted condition of the patient, from bleeding, blistering, vomiting and insufficient food, and, above all, from the state of the lungs causing incomplete oxydation of the blood, and slow asphyxia. That anæsthesia and paralysis accompany asphyxia is too well established to need further comment. I believe, therefore, that too much value has been given by Gubler to the absence of changes in the nervous centres, and too little to the prominent circumstances in which amyosthenia occurred. Truly, such loss of power constitutes paralysis, but it does not follow from it that it must always have a nervous source, for, in several circumstances, it may be and it is the effect of causes quite foreign to the nervous system; and frequently, again, as in the case before us, it is the lethal sign with diseases deeply affecting nutrition. Leudet[1] reports two cases of paralysis following typhoid fever. In one, the four limbs were attacked; there was asphyxia, and death ensued seven days after the onset of the first paralytic symptoms, on the commencement of convalescence. The brain and spinal cord, carefully examined, did not exhibit any alteration. The brain was slightly marked with red points of hyperæmia. The nerves in the lower part of the abdomen had no morbid appearance, and, as stated by Leudet, the sympathetic was not examined. The second case was one of paralysis with loss of sensibility and movement in the arms, incomplete amaurosis, retention of urine, delirium and death. There was found on the autopsy complete integrity in the brain and spinal cord. From the frequency of local hemorrhages, often intra-muscular, in typhoid fever, and from instances of acute ascending paralysis from blood poisoning, Leudet is inclined, with good reason, to look upon the alteration in the blood as the cause of the amyosthenia following typhoid fever. Let it be added that A. Vogel has described a loss of motory power, due to intra-muscular hemorrhages in the lower extremities, occurring during the convalescence of typhoid fever, and on the first attempts to walk made by the patient.

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[1] Remarques sur les Paralysies Essentielles consécutives à la Fièvre Typhoïde. Mém. de la Société de Biologie, Tome ii., 3ème Série, 1860, p. 167.

It is very important to remark, that none of the reports of reflex or peripheral paralysis allude to any microscopical examination of the nervous elements in the organs where the paralysis originated. Consequently, there remains an unexplored field of interesting research, on the morbid changes undergone by the peripheral nerve fibres and cells, in reflex as well as in other paralysis; for in morbid, as in normal physiology, there are local phenomena with the nerves which do not directly originate from the spinal cord or brain, but from their proper automatic action. That peripheral morbid influences may travel through a nerve and injure the spinal cord and brain, is indisputable. Physiology confirms it in the peculiar action of woorara and strychnia on the motory and sensory nerves. The experiments of Bernard and Stannius[1] prove that the functions in the nervous centres may be extinguished by the poisonous influence conveyed through the nervous branches. With woorara, the action goes from the extremity of the motory nerve fibre to the motory cell in the spinal cord, but does not reach beyond; while strychnia goes through the sensory fibres, to extend its effects from one to another sensory element in the spinal cord, until it affects the whole sentient system.

Pathology also affords no less valuable evidence of a peripheral lesion traveling backward through the trunk of a nerve to affect the spinal cord or brain—the following being a valuable instance of the phenomenon: A soldier was operated upon for aneurism of the right axillary artery. In applying the ligature, the nervous branches of the brachial plexus detached from the third cervical pair were included; cerebral symptoms followed on the seventh day, and death ensued on the eighth. The post mortem examination showed an abscess in the left posterior cerebral lobe.[2] As evidence, again, of the share which the sympathetic might have in the mode the peripheral derangement exerts its influence, even over organs not directly connected with the injured nerve, we briefly quote a curious case from Le Bret.[3]

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[1] C. Bernard, Sur les Propriétés des Tissus Vivants, 1866, pp. 339, 341.

[2] Lallemand, Recherches Anatomico-pathologiques sur l'Encéphale, Vol. i., p. 123.

[3] Mémoires de la Société de Biologie, Vol. v., 3ème Série, 1853, p. 119.

A healthy soldier, aged 22, fell during drill, dislocating the right shoulder. The dislocation was reduced immediately, by violent extension. No sooner was the caput humeri replaced in its normal position and the limb left to itself, than the young soldier perceived, without any pain, that paralysis extended all over the arm and forearm. There was total incapacity of movement, with complete anæsthesia from the elbow down to the tip of the fingers, entire loss of motion and tactile sensibility on the corresponding side of the neck and face, with ptosis, and, from the moment he was injured, the patient remarked that the sight began to diminish gradually and in a perceptible manner in the right eye. When Le Bret saw him, five months afterward, with the above symptoms and ptosis still persisting, the right pupil was contracted and slightly movable. In spite of local blistering and electricity, the paralysis progressed, inducing muscular atrophy in the shoulder, arm and forearm. The fingers, frequently numb, cold, and bluish, were the constant seat of formication and occasional lancinating pain, extending upward to the supra-clavicular space and the cervical region, with great suffering to the patient. A hydropathic treatment improved nutrition and tonicity of the paralyzed muscles and the circulation of the skin, which regained its normal appearance in the hand. The sight and the functions of the eyelid were recovered, as also the power of motion in the face and neck, and of elevation in the shoulder. Sensibility reappeared in the region of the elbow, but no further down. Compression of the deep cervical plexus, and of the origin of the brachial, below and behind the lower insertions of the sterno-mastoideus, at once determined a very acute pain in the whole arm. In reference to the symptoms of the eye, in this case, let me remark that, not long ago, Paget called attention to the change of size of the pupils after injuries of the brachial plexus at the base of the neck. Dr. J. B. Done, formerly House Surgeon in Bellevue Hospital, has communicated to me the following observation, which seems to correspond with the results of irritation of the sympathetic in the neck obtained by Bernard. A man was admitted into the hospital with dislocation of the right shoulder. Previously, he had suffered from dislocation of the left shoulder, reduction of which had been attended with contraction of muscles of the forearm and hand, existing at the time of admission. The dislocation was reduced in the usual manner by gradual extension, during anæsthesia, and was this time again followed by a contraction of the muscles of the right forearm. Both dislocations were the result of accidental injury, and on neither occasion was the state of the pupils noted. While on this subject, it will not be uninteresting to mention that Chassaignac has pointed out a peculiar form of partial infantile paralysis, attacking the upper extremities, and which suddenly occurs upon external injury, chiefly by pulling about the child by the arms. The paralysis is of short duration.

Drs. Mitchell, Moorehouse and Keen, in their last monograph "On Gunshot Wounds and other Injuries of Nerves," report various interesting instances of morbid influence traveling backward, along the injured nerve, to reflect upon the extremities of the main trunk. Duchenne de Boulogne has likewise insisted upon this fact in his work "On Medical Electricity." Brown-Séquard, in his essay "On Diseases of Nerves,"[1] and his lectures "On the Physiology and Pathology of the Central Nervous System," describes the influence of local nervous affections, a subject before studied in an interesting manner by Descot and Bérard.[2] Le Bret refers, in addition to the case already quoted, to three others, reported by Flaubert of Rouen, in which the attempts to reduce dislocation of the shoulder were attended with hemiplegia.[3] One of these cases proved fatal. On post mortem examination, all the nerves of the arm in the axillary region were found united by cellular tissue, which had evidently been the seat of long continued inflammation, and thinned from constant pressure of the head of the humerus. The torn extremities of the four lower pairs of the brachial plexus laid in the tissue of the scaleni, separated from their insertion to the spinal cord. The ganglia of the posterior roots were floating out of the vertebral canal. The peripheral extremities of the nerves looked quite natural. The brain was likewise normal, but the spinal meninges appeared congested

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[1] A System of Surgery, by Holmes, Vol. iii., p. 877.

[2] Descot, Affections Locales des Nerfs, Paris, 1825.

[3] Répertoire Général d'Anatomie et de Physiologie Pathologique, 1827, Tome iii., p. 55.

and the cord softened in the cervical region. The details of this case may be of interest in regard to the history of the pathology of peripheral paralysis from traumatic causes.

Of such alterations as those undergone by the peripheral nervous system, Longet has been one of the first to describe the condition of the nerves in a case of paralytic varus of the right foot.[1] "The nerves of the right leg were thinner than those of the left extremity. No marked change was perceptible in the spinal cord or the brain; but the anterior roots of the lumbo-sacral nerves forming the right sciatic nerve had scarcely one-quarter the diameter of the corresponding nerve of the left side, while the posterior roots of both sides presented the proper thickness. The atrophied roots had a brown and almost ochrey color. Only one of them escaped atrophy and discoloration." Rokitansky, according to Hase, has detected spontaneous primitive atrophy of the peripheral nerves, without any well acknowleged cause, and probably due to the influence of cold or violent efforts.

Dr. J. Luys has studied muscular contraction, twice in hemiplegia from apoplexy, and once in paraplegia due to softening of the spinal cord. In all these instances the muscular contraction was induced by paralysis of the antagonistic muscles, upon fatty granular degeneration of the neurilemma, and fatty granular coagulation of the medullary substance, with complete disappearance of the cylinder axis in their nerves. The muscles supplied by these very nerves had also undergone a granular fatty degeneration, and contraction was simply the result of persisting tonicity in the unaffected muscles.[2] I may add that in the same year of 1859 I noted, with Prof. Ch. Robin, a similar condition of the nerves and contracted muscles in cases of Pott's disease, while engaged in my researches on the true nature of the so-called tuberculous affections of the vertebræ. Cornil has examined, also, the nerves of a contracted and paralyzed arm of a woman, who died from an old hemorrhage in the corpus striatum and optic thalamus. The nervous degen-

[1] Romberg, "On Diseases of the Nervous System." Sydenham Society, 1853, Vol. ii., p. 364.

[2] Comptes Rendus et Mémoires de la Société de Biologie, Tome i., 3ème Série, 1859, p. 70.

eration in this case was mainly caused by hypertrophy of cellular tissue, with hypertrophy and hypergenesis of nuclei in the connective tissue of the nervous sheaths. The nerve fibres were natural.[1]

The most valuable evidence, however, as regards the cause of peripheral paralysis, and accounting for its existence independently of initial lesion of the spinal cord, will be found in the following interesting examples.

L. Dumenil, of Rouen,[2] reports: "In a man of fifty-three, suffering from incomplete motor paralysis of the left arm, there coexisted complete paralysis of the tongue, attended with inability to swallow solid food, and imperfect paralysis of the muscles of the face. The patient having been accidentally killed, both hypoglossi were examined, and found to be highly atrophied and gray in color. The terminal branches in the muscles of the tongue contrasted strikingly with the ramifications of the trifacial and glosso-faryngeal nerves. There was a somewhat similar condition of the peripheral branches of the facial nerve and the anterior roots of the spinal nerves, especially on the left side. The muscles supplied by the latter were very pale, and far advanced in fatty degeneration. This was not the case with the muscles of the tongue and face."

The same Dr. Dumenil[3] reports another instance of peripheral paralysis of movement and sensibility, with atrophy of the nervous branches in the paralyzed parts. These are the main features of this valuable case: An old man, aged 71, anæmic, thin, and always of regular habits, was at first seized with formication in the left foot and right arm, which, after several days, extended to the left arm. There was no headache or other pain whatever. Subsequently, both feet became completely paralyzed; this was not the case, however, with the legs and thighs, which respectively preserved their movements. There was loss of sensibilty to pricking in the lower half both of the external and internal integuments of the right leg, and sensibility was very dull at the sole of the foot. In the left limb sensibility was

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1 Comptes Rendus de la Société de Biologie, Tome v., 3ème Série, 1863, p. 8.

2 A Year Book of Med. and Surgery, Syd. Soc., 1860, and Gaz. Hebd. de Méd. et Chir., 1859, No. 25, p. 390.

3 Gaz. Hebd., March 25th, 1864, No. 13, p. 203.

lost in the external lower fourth of the leg and in the foot, but remained normal in the integuments of the internal region. The upper limbs had only the hands involved; the patient could not grasp at any thing, and the right hand was weaker than the left. The intelligence was clear; no impediment with speech nor inability to swallow; sight, cutaneous sensibility of the trunk, micturition and defecation normal. No pain over the spine, pulse irregular and very unequal, tumultuous beating of the heart, with prolonged first sound, but without venous regurgition or œdema. Electrical irritability was more or less completely lost in the paralyzed muscles of the limb, and the numbness and prickling never reached above the knees nor beyond the hand.

Post mortem examination, after death from latent pneumonia: commencing suppuration in the lower lobes of the lungs; slight pleuritic and pericardiac effusion; fibrinous unadhering exudations on the surface of the heart; injection of the visceral parietes of the pericardium, mainly existing over the auricles; volume of the heart normal; left ventricle very firm, round, with thick coats of a dark brown color; aortic valves somewhat hardened, but without insufficiency or stricture; nothing abnormal with the mitral valves. The stomach had a thickening of the mucous and muscular coats around the pyloric orifice. With the exception of old adhesions between the liver and spleen, the abdominal viscera were natural.

The brain, spinal cord and its nervous roots were very carefully examined, and found free from alterations. The muscles, less tinted and developed in the paralyzed parts, did not exhibit any evidences of fatty substitution. The nerves looked natural, excepting, perhaps, the collateral branches of the toes, which were more transparent after long maceration. Dr. Geo. Pouchet, whose great microscopical ability is well acknowledged, examined the nerves and muscles. These latter were not found granular, but they appeared very friable, probably on account of some degeneration undergone by the myolemma, which was not examined. The peripheral nerves in the paralyzed parts and in the sole of the foot—which was the seat of anæsthesia—exhibited a true atrophy of their medullary substance. The lesion involved both muscular and cutaneous branches. The branch of the right median nerve, supplying the muscles attached to the epitrochlea, was found in the early stage of a more distinct and positive alteration detected in the plantar nerves. Such degeneration was not discovered in the nerves of parts not paralyzed.

Charcot and Vulpian[1] noticed that, in a case of diphtheritic angina, the muscles of the palate had undergone, in some places, a very fine granular fatty degeneration. The muscular nerves were composed of altered and sound fibres mixed together, the former exhibiting a granular alteration, also existing between the fibres and underneath the neurilemma, which contained in addition some granular corpuscles like those peculiar to certain forms of cerebral softening.[2] As to the mucous membrane of the palate and its nerves, they were found natural, with a few rare fatty granulations interspersed in the first.

Finally, in a post mortem examination, reported, without history of the disease, in Virchow's "Archiv. für Pathologische Anatomie," etc., July, 1865, there was found a gray degeneration of the posterior columns of the cord, but the cauda equina and the spinal roots were uninjured, while the sciatic and crural nerves, with their branches, were atrophied, and had undergone a fatty degeneration.[3]

Let us now pass to the results of pathological anatomy. It will be seen that I join to my own observations those of four cases very carefully investigated—two by Laborde, and the two others by Cornil and by Kussmaul—and that they are

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1 Comptes Rendus de la Soc. de Biologie, Tome iv., 3ème Série, 1862, p. 173.

2 Charcot and Vulpian think possible that the altered nerve fibres were motory, and those not altered sensory.

3 This paper had gone to press when I read in the Gazette Hebd. de Méd. et Chir., Jan. 26th, 1866, No. 4, p. 51, the commencement of Dr. L. Dumenil's "Contributions to the History of Peripheral Paralysis, and especially of Neuritis." The case reported in this part of the paper is, perhaps, the most valuable and complete observation ever published on the subject. I very much regret the impossibility to give a fuller account of it. A healthy woman, upon concussion of the right sciatic nerve, was taken with paralysis of the right leg, inducing eventually a general loss of power and inordinate sensibility, to which asphyxia and death finally ensued. On post mortem examination, a fatty granular degeneration was discovered on the internal sciatic, popliteal, posterior tibial and plantar nerves, in some of the spinal roots, and in the spinal cord, especially, on the gray subtance and poserior cornua.

followed by the results of other less complete post mortem examinations, but of important bearing on the subject.

Case I.—This patient was in the clinic of my friend Dr. T. G. Thomas, at Bellevue Hospital, in this city. I extract the following details of the case from a very interesting clinical lecture "Upon some of the Diseases of the Spinal Cord," published by Dr. Thomas in the April No. of 1862 of the "American Medical Monthly:"

Agnes Kilvain, native of Ireland; has resided in this country for fourteen years; is married, but has no children; and has been living in a tenement house in this city, performing the duties of housekeeping. Upon inquiry, we found that she has no well marked hereditary predisposition; that her habits have been moderately intemperate, and that she has been a robust woman until this present attack of illness, of which she gives the following history: On the evening of Nov. 23d, 1861—which, she says, was very cold and inclement—she walked out after dark with very thin shoes and stockings, and got her feet wet, and body thoroughly chilled. She retired that night feeling, however, about as well as usual. During the course of the night she awoke from a sound sleep, with a peculiar "heavy feeling in the feet," and finding that she lifted them with difficulty, and that they seemed to be numb and "asleep," she roused her husband, who was by her side, and told him of it. He made light of the symptoms which had "alarmed her," and she in a short time fell asleep again and did not awake until morning; then she found the heavy feeling and inability to move the legs very marked, and getting out of bed with much effort, found that she was unable to stand; in fact, that she was entirely paralyzed in the lower extremities. This took place on the night of the 23d November. On the 6th of December she entered this institution, having been confined to bed, and been paralyzed during the intervening time. We found her now in the following condition: She lies quietly upon her back, and does not appear to be suffering at all; her pulse is 120 to the minute, and in character nearly normal; her skin is warm and dry, but not of a feverish dryness or warmth; her tongue is covered slightly with a white fur; over the sacrum a slough of considerable size, about equal to that of the extended hand, has occurred. The paralysis of the legs is almost complete—the patient being able only to draw them slowly and with much effort for six or eight inches, in bed; she is utterly unable to stand, and we may say that the paralysis of the inferior extremities is as complete as it well could be. She complains of nothing beside the loss of power, but has, during her illness, experienced pain in the back. Upon firm pressure a little pain is found to exist over the second and third lumbar vertebræ. Her menstrual flow is irregular. She has occasionally had jerking of the legs, and formication appears to have existed, but not positively.

After very judicious remarks on the symptoms of the case, Dr. Thomas ventures to diagnosticate red softening, at the same time, however, hesitating on account of the great difficulty in determining positively the lesions occurring in the spinal cord. The prognosis was unfavorable. It was ordered that the patient should have her bowels acted upon by a saline cathartic, and that two nitric acid issues should be placed on each side of the spine, opposite the painful part. The patient was kept quiet, and received the best diet afforded by the institution. She went steadily down, growing weaker every day, and died, on the 16th of December, in a state of syncopy.

"*Post-mortem examination*, Dec. 18th. Nothing worthy of note was found in any organ except the cord. This was carefully removed by Dr. Lyman, and as nothing could be learned from an examination by the eye, I submitted it for microscopical examination to Drs. Metcalfe and Echeverria, who made, concerning it, virtually the same report." The results of the investigation I gave to Dr. Thomas in the following brief note:

"The bodies of the four dorsal vertebræ were neither rough nor changed in their structure; there was no thickening, and very little congestion of the dura mater. The other meninges, however, were much congested, but without any thickening or trace of exudation.

"The external appearance of the cord was natural, and it felt uniformly consistent. Being cut through the posterior median line the gray matter appeared of normal consistency, and exhibited a light rose coloration, more marked in the lower part of the cord.

"In the cervical region (lower part) the gray matter presented two small clots, certainly produced after tearing of the blood vessels during post mortem examination, as there was no congestion around them, nor any of the characters of apoplectic clots.

"Examined under the microscope, the white matter was normal, with a congestive state of its capillaries. The gray matter exhibited in the lumbar region a more increased vascularity than in the others. It was found more abundant with myelitic cells and nuclei of connective tissue, and with a more granular amorphous matter; but without corpuscle of exudation or any trace whatever of albuminous exudation; no abnormal existence of fatty cells and granulations. There were, also, some multipolar nervous cells very dark and granular. The ganglia in the lumbar region were abundant in fine fatty granulations, but normal as to the rest of their structure, with the exception of pigment granules abundant in most of the ganglionic cells."

We will state, in addition, that the investigation was made on parts of the cord without previous preparation, and that most of the alterations were manifest only under high magnifying power—eye-piece No. 3 and objective No. 5, Nachet's microscope.

Case II.—In January, 1863, I saw a boy ten years of age, from the Saint Catherine's House of Mercy, with hemiplegia of the right side and phthisis. The palsy occurred at the age of three, preceded by fever, which lasted two days. Shortly after it the muscles in the neck and the flexors in the forearm became contracted, and wasting gradually progressed in the other muscles, until it reduced the right limbs to nearly skin and bones, with deformities in the joints. The right pupil was larger than the left, though not constantly so. There was no facial paralysis; both checks were congested, and the intellectual faculties weak but not impaired. The head was naturally developed. The urine acid, without albumen or sugar, and depositing by heat abundant phosphates. The first signs of phthisis had appeared two years previously. When I saw him, both lungs were the seat of tubercle in different stages of development. He was very weak from diarrhœa and hectic fever; and, without any sign of tuberculous meningitis, died on the 20th of March.

Post mortem examination was made about eight hours after death, weather being quite cold. The rigor mortis existed on the left limbs and the contracted muscles of the neck and forearm, the paralyzed limbs being entirely relaxed. The right pupil was a great deal larger than the left. I only was allowed to examine the spinal cord, portions of which were saved, with the superior cervical ganglion and part of the spinalis accessorius. The ganglion was firmer than natural and of a dark ochrey color, but the nerve exhibited no change from its usual appearance. The cord was laid bare, from the medulla oblongata to the lower portion of the dorsal region. The theca vertebralis readily detached from the vertebral canal, and had no unnatural appearance. On laying bare the cord, the cerebro-spinal fluid was found opaque, with a rose color, and in great quantity. The meninges, very vascular throughout, could be easily detached from the cord. I did not find, in any place, evidences of tubercular granulations, and did not detect them either over a bare portion of the cerebellum. The spinal cord was softened, particularly on the cervical and dorsal enlargements. Different sections of the cord disclosed no vascular condition of its internal structure; but the surfaces of section were soft and moist, and the gray substance, unsymmetrical in its shape, was, with the white, in many places gelatinous. The more advanced softening was near the anterior median fissure, in the anterior cornua and in the intermedio-lateral tracts.

Under the microscope[1] the gray substance was found much

[1] In this and the next cases the spinal cord and ganglia were at first hardened in spirit of wine, to obtain thin sections of them. These were macerated in alcohol slightly acidulated with acetic acid, and dipped afterward into pure glycerine until rendered transparent. The use of glycerine, which I have learned since 1856 from my friend and teacher, Prof. Ch. Robin, permits us to obtain a more clearly defined structure of the nervous elements, and, as found by J. Dean, is one of the methods best suited to the minute study of the cord. On some occasions portions of the cord were hardened in a weak solution of chromic acid before putting them up in glycerine. To study the

altered in the anterior cornua and intermedio-lateral tracts; it abounded with corpora amylacea and nuclei of connective tissue, and fine granular, amorphous matter of very transparent and delicate appearance. In other places, and especially in the intermedio-lateral tracts, there were groups of brilliant, fatty granulations; undoubtedly, this change was in relation with that undergone by the spinal accessory nerve. The nerve cells had assumed a granular aspect, and were less damaged in the posterior cornua. In the anterior cornua they were filled with pigment granulations, in the midst of very fine fatty granules and amorphous matter. (Fig. 1, Pl. I.) The principal lesion of the white substance existed in the anterior and lateral columns. Besides the corpora amylacea, already noticed, there was a hypergenesis of connective tissue and nuclei, and a fatty granular, amorphous matter surrounding the dissociated nervous elements. The capillary vessels were more manifest near the surface of the white columns; they were not distended, but their coats were finely and brilliantly granular throughout, the alteration appearing to be fatty.

The ganglia in the posterior roots were, like the rest of the cord, covered by the meninges in the above congested condition. Their structure was deeply injured; the nerve fibres and cells had been replaced by a mass of connective tissue and fatty, amorphous matter, with numerous nuclei. Some of the cells contained a great quantity of brown pigment granules. A similar condition, with a greater amount, however, of pigment and fatty granulations, was detected on the cervical sympathetic ganglion, a portion of which is represented, Fig. 2, Pl. I. The anterior roots were much atrophied, with very few granular nerve fibres, and principally constituted by the connective tissue and fine fatty granulations betwixt the primitive fibres. As to the spinal accessory nerve, many of its fibres were reduced to the neurilemma with several nuclei, while others had their natural appearance. The connective tissue and fatty granulations were certainly increased among the elements of the nerve.

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nerves and ganglia, I have used the plan suggested by Liegeois. Maceration of the specimens in tartaric acid renders the cellular tissue quite transparent, thus allowing the number and condition of the primitive nerve-fibres to be easily ascertained.

The capillary vessels in the arachnoid had undergone the same but less advanced alteration described in those of the cord. I found nowhere traces of exudation, and the change undergone by the meningeal blood vessels and by the white columns in some regions was only manifest under very high power.

The fibres of the sterno-mastoideus, contracted during life, exhibited a very fine granular degeneration, which was not fatty. Ether had no effect on the granulations, otherwise rendered transparent with pure acetic acid.

Case III.—A little girl, two years old, became paraplegic after severe diarrhœa and fever, during which she was seized with convulsions. The limbs were very painful from the beginning, the child crying every time it was disturbed—were cold, and commenced wasting immediately upon the appearance of paralysis, which supervened on the diarrhœa. She was again taken with diarrhœa, and became very ill in September, 1864, seven months after the first attack. I saw her two days before dying. She was in a very exhausted condition, with a red tongue coated with aphthæ upon its edges, very thirsty, much troubled with vomiting, and having green, waterish stools, with tenesmus and slight prolapsus recti. The extremities were cold; and from constant vomiting, which prevented her using any remedy or taking nourishment, the child died in a state of stupor on the 28th of September. She had also been troubled with umbilical hernia.

I could only examine the lower portion of the spinal cord, removed from the middle of the dorsal region downward, with part of the lumbar nerves, and the sympathetic ganglia of the inner border of the psoas muscle. In this, as in the former case, the rigor mortis was only present on the upper limbs and upper half of the body, which were the parts not paralyzed. Cadaveric examination was made ten hours after death. Nothing unnatural was noticed in the theca vertebralis; the vascularity seemed increased in the meninges, and their cavity was distended by a whitish thick fluid at the lower end of the cord. The tissue of the cord was softer in the anterior than in the posterior part, and more so in the gray matter. Sections of the cord through the lower dorsal region and the lumbar enlargement revealed atrophy of the anterior and lateral columns. The anterior cornua, the anterior commissure, and the intermedio lateral tracts exhibited to the naked eye patches of a transparent, soft structure insensibly confounded with the altered white substance in its neighborhood, as represented in Fig. 1, Pl. II., which is the enlarged photograph of a section of the spinal cord through the middle of the lumbar enlargement. The white substance in many places appeared nearly normal under a low power, but magnified to 250 diam. it exhibited an increased amount of nuclei in the connective fibres, and a fine granular opaque degeneration, principally located near the gray substance. The lesion was more advanced on the right than on the left side, encroached very little on the posterior columns, and showed very few corpora amylacea in the tissue not softened. The gray substance had a fine and brilliant granular appearance. The nerve cells did not appear shrunken, but were filled with brown granulations masking their nuclei. In the most softened portions of the white and gray substances, the intermediate connective tissue was mixed with nuclei, fine granular, amorphous matter, and several corpora amylacea. Fig. 2, Pl. II., shows this change undergone by the white and gray substances in the right anterior cornu. The spinal ependyma, not diminished in caliber, was surrounded by the degeneration which existed in different degrees throughout the lumbar region, to the very filum terminale.

The fibres of the lumbar nerves were very much shrunken, and surrounded by connective tissue with hypergenesis of nuclei and of fatty granulations. The spinal and sympathetic ganglia had nearly the same structure described in the preceding case. The sympathetic ganglia were tough, and had a brownish color, their cells were richer in pigment granules than those of the anterior cornu represented in Fig. 2, Pl. II., and their connective tissue interspersed with fatty granules and abundant in nuclei. The blood vessels of the cord and meninges, free from deposits of exudation, had undergone the delicate and brilliant degeneration described in Case ii. The fibres in the anterior roots had most of them lost their cylinder axis; others had their medullary substance coagulated or granular; they were atrophied in the midst of hypertrophied connective tissue, with several nuclei and fatty granules. The muscular fibres of the psoas presented various degrees of a fatty degeneration.

Case IV.[1]—A girl two years of age was, when eight months old, taken with relapsing fever and general paralysis, which disappeared, leaving her paraplegic. A tonic local treatment improved the condition of the lower limbs, until the girl was seized with cerebral symptoms (vomiting, strabismus, coma), and died.

Post mortem examination: marked meningitic congestion, without plastic exudation; slight serous effusion in the lateral ventricles; tissue of the brain free from tuberculous granulations, or any other structural change. The volume and consistency of the spinal cord was normal throughout. On reremoving the pia mater, which looked natural, the antero-lateral columns appear as though translucent and of a grayish rose color, instead of having their normal opacity, otherwise preserved by the posterior columns. The same, though less unnatural, discoloration was exhibited by the lateral columns. Several examinations of different regions of the cord, still fresh, showed the lesion involving the whole width of the anterior columns, and only the cortical portion of the lateral. These parts were both superficially and interiorly of a transparent gray color, and less firm than natural. This change was present from the dorsal down to the lumbar region. Under the microscope, the anterior and lateral columns appeared to have increased elements of connective tissue, with cells and nuclei interspersed with fine granular matter composed of fibrils of extreme tenuity. The portions more involved by this morbid tissue hardly contained recognizable nerve fibres, which were distended and varicose. There was complete absence of corpora amylacea.

The multipolar cells in the anterior cornua were unchanged, as also the elements in the posterior columns. No structural change was detected in the spinal roots or capillary vessels, nor in the sciatic nerves and paralyzed muscles—these latter having their fibres somewhat shrunken and slightly discolored.

Case V.[2] A boy two years of age was, when a year old,

[1] Laborde, Paralysie (dite Essentielle) de l'Enfance, 1864, p. 104.

[2] Laborde, op. cit., p. 109.

taken with fever and repeated convulsive fits, in which he seemed unconscious, and became cyanotic, with evidences of being in great pain. He remained from that time unable to walk, it being impossible to ascertain whether the upper limbs participated in the paralysis at the beginning, although certainly they did not continue long in such condition before recovering their power. Atrophy rapidly set in in the muscles of the lower limbs, causing great distortions of the feet. After entering the Children's Hospital the boy contracted ophthalmia, and afterward measles, with double pneumonia, from which he died the 10th April, 1860. The deformities were greater in the right than in the left limb. Voluntary movement was not abolished, but could only be executed in the direction of the deformities and within very narrow limits. The slightest prickling was acutely perceived, causing pain indicative of exalted cutaneous sensibility. The child was very intelligent; he did not talk, probably on account of extreme weakness, but understood every thing he was told. He could easily sit up; he had no spinal stiffness, nor pain on pressing the spine, and finally no strabismus or sign whatever of cerebral derangement. He wet his bed, it being impossible to ascertain whether unconsciously or from great weakness, and at length his life was rapidly extinguished by the double pneumonia.

Post mortem.—The muscular contraction and deformities lasted after the rigor mortis disappeared. Neither tubercular granulations nor other lesions were found in the brain—the meninges being slightly congested, and a very small quantity of reddish serosity effused in the lateral ventricles. A thin coat of a somewhat cloudy liquid surrounded the cord within the membranes, forming at the lower extremities a fluctuating tumor the size of a pigeon's egg. This tumor disappeared as soon as the liquid had its exit by puncturing the spinal arachnoid below the lumbar enlargement: the fluid was yellow, cloudy, thick and gelatinous, amounting to about one hundred grammes. The pia mater was of a high red color, rich in vascularity, with whitish frails of milky appearance existing over its surface as far as the sheaths of the nerve roots. On removing the pia mater the cord was firm enough throughout, and unchanged in normal appearance and color. Looking over different sections the neuroglia (connective cellular tissue of the cord) had the gelatinous transparent aspect peculiar to the tissue in children. Nothing, otherwise than the above congestion of the meninges, was manifest in the nervous roots.

The microscopical examination of the cord, still fresh, without any previous hardening, was made on a thin section at the level of the brachial enlargement. It disclosed the following condition: All the elements, and especially the large and small cells in the white and in the prolongations of the gray substances, had preserved their normal state. There was no developement of morbid tissue on the posterior columns and fundamental central substance of the cord. It did not seem, however, to be the same with the anterior columns; their longitudinal fibres appeared in less than normal quantity, and were even absent in some plàces in the specimen; those persisting were distended, varicose and fragmented—such condition being principally noticed on the peripheral and quite superficial parts of the said anterior columns. This rarefaction of nerve fibres was detected in no other region of the cord, but all along its peripheral substance the nervous elements had undergone a change in their structure, and were dissociated in fragments, and infiltrated in greater or less abundance with granular corpuscles. Finally, the capillary vessels in the pia mater and peripheral nervous tissue underneath exhibited a greater number of nuclei, and their coats were fluid throughout with granules of exudation. This state of the capillaries and nervous tissue existed principally at the lumbar region of the cord, extending, likewise, very evidently to the fibrous sheaths of the spinal roots in the intervertebral foramina. The same, though more distinct, alterations were observed in specimens hardened with bichromate of potash.

It was possible to recognize also the nearly complete integrity of the central structure of the cord, and more particularly of the anterior columns. On comparing the cord with that from a child not affected with paralysis, and examining the more vascular regions, I was scarcely able to appreciate any difference as regards the apparent number of normal elements: that is to say, a slight trace of partial atrophy, and this more particularly on the anterior columns. The difference was, however, so very slight, that I would not venture to affirm that they constituted a morbid condition. Different was it, indeed, with the peripheral regions beneath the pia mater: there the capillaries had considerably increased, and their coats were covered with exudative granulations otherwise infiltrated among the disassociated nervous elements. This lesion was seen throughout the cord from the brachial to the lumbar enlargement, where it reached its maximum. The corpora amylacea were in no place abundant. The same evidences of intense exudative congestion existed in the pia mater, mainly on its visceral coat. Investigation of the peripheral nervous system only disclosed a relative diminution of nerve fibres in the left sciatic nerve, with abnormal multiplication of fibres of connective tissue. The muscles had undergone different degrees of granular, but not fatty, degeneration, which terminated by reducing the fibres to a hyaline tube constituted by the myolemma.

Case VI.[1]—A woman, forty-nine years of age, became paraplegic in 1815, at the age of two, from exposure to dampness and cold. She could not walk until she was eight years old. The greater paralysis was in the muscles of the left foot and leg. In 1860 she had fracture of the tibia, the result of falling, and a second fall during convalescence broke the bone again. The 28th of August, 1862, she was operated on for cancer of the right breast, and six months after the cicatrix and the left breast became painful, with œdema of the right arm. From this date she had chills and fever, with pain along the right intercostal nerves, and dyspnœa, which persisted up to her death, the 10th of October. The lower limbs were atrophied—the feet most completely paralyzed. The left foot was turned in; the right foot and leg were œdematous. Tactile sensibility seemed deadened in this limb, but the other kind of sensibility unaffected.

Post mortem examination.—The pericardium, heart, intestines, bladder and uterus, were the only organs not invaded by

[1] Cornil, Comptes Rendus de la Société de Biologie, 1863, Tome v., 3ème Série, p. 187.

cancerous granulations. The spinal cord was small, especially in the dorsal and lumbar regions. The antero-lateral columns had undergone a very perceptible atrophy. At the beginning of the lumbar enlargement the antero-posterior diameter was from one-quarter to one-fifth smaller than in the normal state. Examined with the microscope the whole length of the cord exhibited, from the first cervical nerves to its very extremity, an anatomical alteration characterized by the presence of a considerable amount of corpora amylacea. These corpuscles were abundant in the anterior cornua, principally in the vicinity of the blood vessels and on the anterior columns. They, however, were also found on the posterior columns. The nerve cells were unaltered, and preserved their normal relations. The left, more than the right sciatic nerve, had undergone atrophy of its medullary contents. Complete fatty substitution, with atrophy of the primitive fibres, had taken place in the muscles.

Case VII.[1]—A man, 58 years of age, entered the Surgical Clinic the 17th December, 1861. He was lame, and attributed it to a false step. When cured of this accident, it was found that the lower limbs were palsied, the paralysis being then referred to chronic cystitis, from which the patient suffered. He had, beside, two large, very painful, scrotal herniæ. No record was kept of the electrical condition of the muscles; but, according to Kussmaul's recollection, they responded pretty readily to the electric stimulus. Extensive mortification set in on the inner region of the left heel, and upon its increased size and suppuration appetite and sleep were lost, and the patient died from marasmus the 22d December, 1862. Autopsy: Body emaciated. Dura mater firmly adhering to the thick, compact calvarium. Sub-arachnoid cellular tissue œdematous. Cerebral convolutions not prominently marked from diminished depth of the sulci. Substance of the brain pale. Ventricles enlarged, with the ependyma thickened, and a cystic degeneration of the arachnoid plexus. No lesion of the vertebral canal; large quantity of cerebro-spinal fluid in the spinal arachnoid; the tissue of the cord firm throughout, and free from any

[1] A. Kussmaul. "Beiträge zur Anatomie und Pathologie des Harnapparatus, Part vi. Zur Lehre von der Paraplegia Urinaria," in Wurzburger Med. Zeitschrift, 1863, p. 56.

degeneration whatever, apparent to the naked eye or under the microscope. Slight stenosis of the mitral opening, and also slight hypertrophy of the left ventricle. Intestines displaced on account of the hernia; peritonitis. Bladder, the size of a goose egg, adhering to intestines; its serous and sub-serous coats were thickened and indurated; the muscular coat, likewise thickened, contained small abscesses, and was separated by exudations from the serous coat. The right kidney, enlarged, presented a general cystic degeneration, which was less advanced on the left. The aorta abdominalis, the iliac, femoral and popliteal arteries were atheromatous, the degeneration reaching its maximum on the hypogastric artery, which exhibited many of its branches changed into a calcareous tube. The inferior vena cava contained a few clots. Microscopical examination of the sciatic nerve showed many of its primitive fibres normal; but in others the medullary substance was coagulated in quadrangular masses, and in others, again, it had undergone a complete degeneration into fatty globules, or aggregates of fine fatty corpuscles. The muscles of the lower extremities had partially undergone also a fatty degeneration. Kussmaul admits that "the paresis of the limbs was caused, in this case, by the degeneration of a portion of the nerve fibres forming the sciatic nerve. Probably the same change was extended to the muscular nerves of the bladder and sphincters, the case being altogether one of peripheral and not central paralysis."

Although no microscopical examination was made in the following cases, they afford, however, manifest evidence of the lesion in the cord. I quote them because, thus far, two of them seem to have passed unnoticed by those who have inquired into the subject of reflex paralysis.

Case VIII.[1]—A young soldier, who had lately recovered from a petechial fever, was affected with pain in the dorsal vertebræ, difficulty of moving the lower extremities, retention of urine, involuntary discharge of feces, general debility and emaciation. A variety of treatment was employed for several months

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[1] Brera, Della Rachialgite, cenni Patologici. In Atti dell'Accad. Ital., Tomo i., and in Abercrombie, op. cit., p. 295.

without relief. The weakness of the lower extremities increased to perfect paralysis; and, soon after, the superior extremities became affected in the same manner. He then lost his speech, and, after lying a fortnight in this state, completely immovable and speechless, but in possession of his intellectual faculties, he died suddenly.

On inspection, there was found no trace of disease in the brain, the thorax or the abdomen. The spinal canal was inundated by a large quantity of sanious fluid; the cord itself was suppurated, dissolved and disorganized at the lower part of the dorsal region; above this it preserved its figure, but was very soft. Its investing membranes, and the periosteum lining the canal of the vertebræ, were destroyed at the part where the cord was so much diseased; but the vertebræ and their ligaments were sound.

Case IX.[1] A young man, twenty-eight years of age, was admitted into Dr. Serre's ward at La Pitié, the 18th of April, 1825. He had disease of the heart, which was relieved; but symptoms of peritonitis and enteritis ensued. In the course of this last affection the patient complained of a great weakness in the lower limbs. When the acute symptoms had subsided, and he was thought to have entered upon convalescence, complete paraplegia occurred. The patient could not move the thighs or legs. Sensibility was not lost, but rather seemed to increase along with the loss of power, for the patient cried every time he was moved or touched. The bladder became paralyzed shortly after the onset of paraplegia; there was retention of urine, and on it becoming necessary to keep a sound in the bladder, this organ inflamed. Sloughs soon appeared on the sacrum, and the patient died. On post mortem examination the dura mater was found fungous, the anterior columns softened and disorganized to an extent of three and a half inches, and the posterior columns only slightly altered for about one inch. (Crouzit).

Finally, in a case reported by Fliess,[2] and quoted by Barthez and Rilliet, and by Laborde, the paralysis of one arm was

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[1] V. Robert. De la Paraplégie consécutive à la Fièvre Typhoïde. Thèse. Paris, 1862, p. 33.

[2] Journal für Kinderkrankeiten, July and August, 1849, p. 39.

attended with meningitic congestion of the spinal cord, at the level of the brachial plexus corresponding to the paralyzed limbs. No microscopical examination was made of the cord, but it is fair to presume, from what was observed in the above cases, that the meningitic congestion must have coexisted with changes in the apparently normal cord. The same meningitic congestion has been remarked by Briquet in two cases of hysterical paralyis, in which also no microscopical search was made in the nervous centres. Stanley notices this congestion in one case of urinary paraplegia. In another case of paraplegia from wet and cold, Dr. W. Stokes found that the cauda equina appeared to be slightly softened; but from its appearance Dr. Stokes could not state that it was actually diseased. The rest of the spinal cord appeared healthy and normal, without any vascularity, effusion or softening. External to the sheath of the cord there was a small, flattened, oval body, about the size of half a very small hazel-nut, and of a consistence intermediate between lymph and fat. Around this there was some slight degree of vascularity.[1] Notwithstanding Dr. Stokes' opinion, I think that we are borne out by the details of this case to suppose that there was a change undergone by the spinal cord, which the microscope would have probably detected.

Acknowledging the difficulties in diagnosticating the disease in Case i., I believe it was a typical one of paraplegia upon exposure to cold and wet. Without the microscopical examination made by Dr. Metcalfe and myself, the case would have certainly been added to the number, already large, of those in which no visible lesion or exudation has been detected in the spinal cord. Truly, as stated by Dr. Thomas, this could not have been a case of simple congestion, because the attack was too complete and sudden; and if congestion did exist as the pathological state from the beginning, it must have been the forerunner of softening, for such grave results to have followed. On another hand, the injury sustained by the sympathetic seems evident from the complete paralysis, the fever, and the large slough upon the sacrum, symptoms which rapidly

[1] Graves, op. cit., p. 359.

developed themselves, and which could not be otherwise accounted for than by lesion of the vaso-motory nerves. I regret not having had the opportunity of ascertaining the degeneration undergone by the sympathetic ganglia and the muscles. Cases ii., iii., iv., v. and vi. are examples of functional paralysis, and Case vii. proves how the spinal cord may remain unaffected—peripheral degeneration of the nerves accounting for the existence of urinary as well as of any other functional paraplegia. I am well aware that it may be questioned whether Case viii. was one of true functional or reflex paralysis. It is not, however, my purpose to maintain a contrary view. It has mainly been brought out here, because it is one of the rare opportunities in which the fatal termination of the disease has permitted the damage suffered by the nervous system in paralysis consecutive to acute diseases to be demonstrated (asthenic palsy of Gubler). Case viii. is an interesting example of paraplegia from enteritis.

[To be concluded in next number.]

Entropion and Trichiasis of the Upper Lid; their Radical Treatment, by an operation, without division of the Skin. By JOSEPH S. HILDRETH, M.D., late Brevet Lt.-Col. and Surgeon U. S. Vols., in charge of Desmarres (U. S. Army) Eye and Ear Hospital; Ophthalmic and Aural Surgeon to Cook County Hospital, Chicago, Illinois.

That abnormal condition of the lid which makes its free border turn inward is called Entropion. Its causes are various; but the operation here proposed is intended to apply, mainly, to that form of the affection resulting from atrophy, or loss of the mucous membrane, and alterations of the tarsus.

Trichiasis is that condition of the eyelashes which brings them into contact with the globe. Certain modifications are designated as districhiasis and tristrichiasis, according to the subdivision of the deviated lashes into two or three rows.

These distressing conditions of the lid, so frequently fatal to the eye involved, can be relieved, permanently, by surgical or mechanical means only.

When confined to the lower lid the procedure is comparatively simple ; but the upper lid, from its peculiar mechanism, is much more difficult of treatment.

To relieve that form of entropion referred to above and trichiasis, I resort to either destruction of the cilia or change their position on the tarsus. The former operation is admissible when but few of them are affected, and on account of extreme age of the patient or other conditions the latter becomes inexpedient. With these exceptions, the operation of "transplantation" is always to be preferred. This consists in dissecting up that portion of the lid which contains the deviated cilia from the tarsus, and then causing it to become so attached to the cartilage that the lashes assume and remain in their proper position.

Before describing the manner in which this may be accomplished, a few words upon the mechanism of some of the parts involved will not be inappropriate.

1st. The position and functions of the orbicularis are such that, when contracting, it tends to draw the ciliary margin of the external integument of the lid *over* the free edge of its cartilage.

2d. The levator, when contracting, tends to draw the free edge of the cartilage *away* from the ciliary margin of the skin covering it.

Hence two antagonistic forces, *both* tending to produce a projection of the ciliary border of the skin covering the lid over the corresponding edge of the tarsus, and thereby deviating the cilia inward.

This constitutes the principal obstacle to be overcome, and the one which not unfrequently militates against success in the operation of transplantation.

To counteract this difficulty, and at the same time avoid dividing the external integument, the following method of operating suggested itself.

1st. An incision is made in the free edge of the lid, anterior to the orifices of the meibomian glands, and posterior to the deviated lashes.

It may extend from within one millimetre of the lachrymal punctum to the outer commissure, or further, if required.

2d. The tarsus is to be dissected in its whole breadth, and, as far as practicable, to the length of the incision just made, from the parts external to it, including the skin, orbicularis, etc.

The *former* is now under the influence of the *levator* only, the *latter*, that of the *orbicularis.*

3d. The lid must next be reversed outward, and the tendon of the levator made to descend, so that a separate, coarse silk thread can be passed through it, close and parallel to the superior edge of the tarsus, and near both extremities of its separation from the external integuments. Both strands of each ligature must come through the mucous surface, and each loop should embrace horizontally about five millimetres of the tendon, taking care not to include any of the parts external to it. The four strands of the two cords thus left projecting from the aperture of the lids should be left four or six inches long, in order to insure fastening to the cheek.

4th. Traction on these cords must next be made sufficient to bring the ciliary edge of the tarsus in contact with—in some cases below—the corresponding border of the opposite lid, and then firmly secured to the cheek by strips of adhesive plaster.

The skin and fibres of the orbicularis are now to be drawn upward and fixed to the tarsus in proper position by two *broad* stitches, inserted near the junction of the outer third with the inner third of the dissection of these parts from the tarsus.

The following cut, sketched immediately after an operation, shows the proper position of the parts.

1, Represents method of securing cords which control the levator.

2, 2, The cords holding the levator.

3, 3, Stitches securing proper position of external integument.

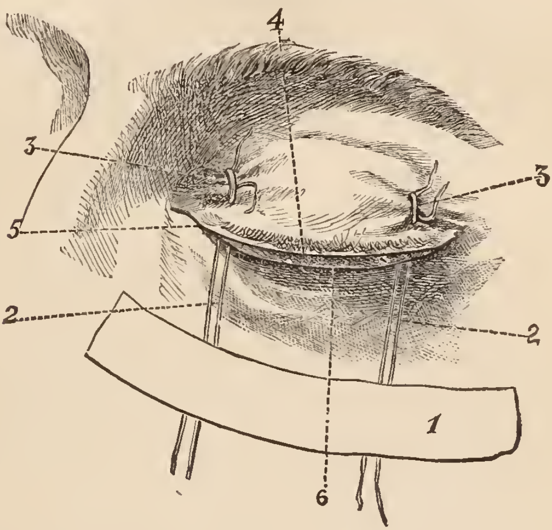
4, Ciliary border.

5, Lachrymal punctum.

6, Border of tarsus, projecting, in this case, about two millimetres below the ciliary margin of the skin.

The strips of adhesive plaster should be numerous enough and the cords sufficiently long to guard against slipping.

The lower border is made to project a short distance below the ciliary margin of the external integuments, to allow for subsequent contraction. The extent to which it should project must depend upon the condition of its inner and lower edge. If this is well defined, it requires less than when rounded and irregular. In some cases, after adhesion has taken place, it may be well to remove a small portion of the lower border of the cartilage and thereby restore its normal shape.



The cords holding the levator should always be so arranged as not to rest on the cornea. They can be passed through the upper margin of the cartilage as well as the tendon, if the operator is fearful of their becoming detached too soon, and may remain in position a week, if desired; but three days, ordinarily, will be sufficient.

The outer stitches can be removed after the third day. But the removal of these as well as the long cords must of course depend upon the rapidity and firmness with which adhesion takes place.

Both eyes should be kept closed until the cords are removed.

Great care should be taken to so operate as to include *all* the deviated lashes. Should a few escape, they can be destroyed subsequently.

The advantages offered by this mode of operating are :

1st. No wound of the external integument of the lid is required, which always produces more or less deformity.

2d. The tendency of the transplanted parts to suppurate, to fail to unite well, or of the cilia to subsequently fall out on account of imperfect nutrition, is avoided.

The circulation of the parts being but little interfered with, reunion is rapid and the result permanent.

The presence of the cords within the lids controlling the levator, like stitches required within the lids in other operations, does not prove to be a practical objection.

Case of Diastasis of the Sternum, with Remarks. By HERBERT M. HOWE, M.D., Episcopal Hospital, Philadelphia, Pa.

J. S., born in Ireland, aged 28, by occupation a sailor, brought into the hospital about 4 o'clock this morning (January 14th, 1866), by some men who stated that they found him in great distress, lying below a bridge from which he had fallen. They supposed the height of the bridge above the railroad that lay beneath to be 18 or 20 feet.

The man appeared to be in extreme pain; his head thrust forward and downward between his shoulders, which were at the same time much bowed. Dyspnœa was very marked; it caused excruciating agony for the man even to attempt to change the line of his body, and when moved at all, he was lifted with his fixed position unchanged. He referred his pain to his breast and back. Upon examining his back no injury could be found, but upon inspecting the chest it was observed to present a peculiarly abnormal appearance. In the position of the lower part of the manubrium there was a deep depression; no crepitation could be elicited by direct manipulation; but it was perfectly evident that there was fracture or dislocation between the gladiolus and manubrium. Pressure upon the upper end of the gladiolus was insufficient to relieve this condition, so resort had to be made to muscular action. Seating the man in a chair, I went behind him, and, having placed my knee against his back, pulled his shoulders forcibly toward me, whereupon distinct crepitus was communicated to my hands, and the bone, with a sort of a snap, assumed nearly its natural position. The relief given was very marked, the man straightened himself up, and took full inspirations with comparatively little pain; indeed, he felt himself so much better, in comparison with his former condition, that he thought he might be allowed to go home. Still the gladiolus and manubrium were not entirely in proper apposition, the former still being a little anterior formed a perceptible ridge. Pressure with the hand against the gladiolus was tried, but no change could be produced by that means. It was found impossible to replace the bones entirely into the normal position, by any immediate interference—so advantage was taken of position, thereby insuring gradual but continued force. For this purpose a bandage (posterior 8 of the shoulders) was applied quite firmly, and the man placed in bed with but one pillow beneath his head. He was quite comfortable in this position; auscultation revealed no injury of the lung; heart's action much increased. An opiate was given, and in a short time the man was quietly sleeping.

January 15th. Reports that he slept but little during the night, but that he is comfortable; his appearance is better. The diastasis is not entirely reduced, but there is an appreciable improvement since I left him in the night; that more advantage might be taken of position, the pillow is to be taken from beneath his head. This change does not seem to render him at all uncomfortable. He complains that his breath "catches him" up on a full inspiration. On examining the chest there is found to be commencing pleurisy in the neighborhood of the injury; no emphysema, heart movements regular. It has been necessary to draw off his water with the catheter.

Jan. 16th. There is a marked improvement in the position of the manubrium this morning; there is now a very slight ridge defining the line between it and the gladiolus. Placed a compress, held firmly by broad strips of adhesive plaster running the whole length of the chest. Allowed a small pillow, and gave grs. v. of blue mass.

Jan. 17th. Better. Passed his water without the catheter several times since yesterday. Pain in the back decreased;

tongue clean and moist. Still some pain in the neighborhood of the injury.

Jan. 21st. In violence of orders he has gotten up for the purpose of changing his shirt, and has somewhat displaced the manubrium again. Replaced it, and reapplied the compress.

Feb. 15th. Allowed to get up.

Feb. 19th. Removed compress.

Feb. 22d. Discharged, cured; the bones seeming to be firmly fixed in their natural positions.

The very unusual occurrence of either diastasis or fracture of the sternum has prompted me to submit the above case for publication. But, apart from the infrequency of the accident, this one presents certain peculiarities, not only in the manner in which the diastasis was caused, but also in the fact that the sternal injury was uncomplicated. In the majority of cases on record the patients suffering from dislocated sternum have sustained so many other and severe inflictions that the cases could by no means be regarded as typical.

At the time the patient first presented himself, he was so harassed with pain that it was impossible to gain from him any precise account of the manner in which his injury was received. At the earliest opportunity, however, I possessed myself of all the data upon which the evidence of the man could be regarded as reliable. Nearly all that he remembered concerning the fall was that he struck upon his feet. His story in this respect is rendered probable, seeing that his body presented no wounds or bruises. The possibility that either fracture or diastasis of the sternum may be caused by the force of a considerable fall being received by the feet is a well established fact. Prof. Gross, in his "System of Surgery," notices a case of transverse fracture of the sternum caused by "jumping, in a state of intoxication, off a shed eleven feet high." The force of the jump was expended upon the feet, and Professor Gross goes on to say that "the fracture was doubtless occasioned by the effort which the man made to regain his equilibrium." The fracture was ascribed to muscular violence—to inordinate contraction of the sterno-cleido-mastoid. By referring to a paper on fractures of the sternum, by Dr. J. Ashhurst, published in the American Journal of Medical Sciences, for October, 1862, p. 406, there will be found, among the reports of fractures and diastasis of this bone, several where the injury was caused by indirect muscular violence. In one, fracture was caused during labor, in another it was brought about by "contraction of the diaphragm in vomiting." The mechanism by which diastasis or fracture of the sternum is produced when the force is applied to the feet or buttock, does not, it seems to me, consist solely in *contraction of muscles*, as seen in the exertion to regain or maintain equilibrium. The force of a fall being expended upon the feet it is instantly conveyed upwards over the whole body, until at last the head and shoulders receive the shock; and they, acting through the clavicle upon the upper portion of the manubrium, tend to force it forward, while its lower edge slips behind the gladiolus. This mechanism seems to have been demonstrated in a case given by Aman, "where separation of the first and second bones of the sternum occurred from a violent effort, as lifting made with the shoulder, which the patient had placed under a bar which he was using as a lever of the second order." (Ashhurst, Fracture of the Sternum.)

Fracture or diastasis might readily be caused by the knees coming forcibly against the sternum, as they would very probably do, even though the fall be first received by the feet. This, however, would belong to the class of injuries received by direct violence.

Each case of an injury so infrequent as diastasis of the sternum has peculiar interest attached to it, and therefore I am anxious to put the facts on record. I find no other similar case recorded in the practice of the House. A case of probable fracture of the sternum, caused by direct violence, has occurred here within the past year.

Recovery from a well marked Case of Concussion of the Brain. By S. D. Twining, M.D.

At Alexandria, Virginia, September 13th, 1865, A. L., aged 21 years, in a state of somnambulism, fell from a third story window to the pavement, thirty-four feet below. He was immediately carried into the house. Three medical gentlemen were soon in attendance, who, after careful examination, pronounced the case hopeless, and left him to the care of his friends, after applying cold to the head. They, later, called the writer, who, seven hours after the accident, in company with Assistant-Surgeons S. B. Ward, U. S. Vols., and W. C. Minor, U. S. A., visited the patient. He was found lying upon his back in an unconscious condition, insensible to pain. When spoken to in a loud voice he would give no sign of recognition, but occasionally he would move his limbs; the extremities were cold; breathing free, and pulse feeble and irregular.

The body was injured in several places; the soft parts about the temples, eyes and lower jaw were bruised, much swollen, and of a dark bluish color—the eyelids so swollen as to prevent recognition of the pupils. Over the right temple the integument was broken; the hands and feet were badly bruised and injured; the middle finger of the right hand was dislocated at the second joint, and there was an oblique fracture of the tibia of the left leg, indicating that the weight of the fall had been received on the hands and feet.

The fracture was reduced, and pasteboard splints applied; the injuries were dressed, and the bruised parts were bathed with dilute tincture of arnica; the patient was wrapped in warm blankets, and there was given sulphate of magnesia, one ounce, and barley water to drink. Eight hours afterward the patient had recovered sufficiently from the shock to be restless under the pain he suffered; pulse 70, and weak. Cold was applied to the head, and one-quarter of a grain of sulphate of morphia was given to allay irritability arising from his injuries.

Sept. 14. Patient did not rest well during the night; pulse 50, and weak; the bowels had moved moderately. Given wine, one dram every two hours, and chicken broth. At evening pulse was 60 and fuller. Treatment continued.

Sept. 15th. He answers when spoken to; slept well during the night; appetite improved; complains of pain in his head, and through his back and limbs; pulse 80 and quite natural. Stimulants discontinued.

Sept. 20th. He has become restless; pulse gradually increasing to 120, full and strong. There was increased pain in the head, and at times muttering delirium; relief was given by freely moving the bowels by enema, and repeated doses of sulphate of magnesia; sulphate of morphia was given at night to allay irritability, and latterly fluid extract of valerian and compound spirits of ether, equal parts—dose one dram in water every four hours.

Sept. 22d. Pulse 96; patient slept all night; awakes, talks naturally for a minute or two, and then goes to sleep again; does not complain of pain. Treatment, nervines and nutritious diet.

Sept. 24th. Pulse 100 and weak; suffers pain in the back part and side of head; applied cold to the head and mustard to the neck, and between the shoulders; bowels were moved by enema. Given wine, one dram every three hours; also renewed mixture of fluid extract of valerian and compound spirits of ether.

Sept. 27th. Pulse 88; slept well; appetite good; pain in head slight.

Oct. 5th. Patient has not had a recurrence of head symptoms; is now able to read; has a good appetite, and rests well.

Oct. 19th. Patient has continued to improve, and would be up if it were not for inflammation of the left knee and thigh, resulting from a blow received at the time of the accident, which keeps him on his back. He has been much weakened and irritated by his injuries; a bruise on the back resulted in a large sloughing sore, over which there is now forming a healthy cicatrix. The fracture of the tibia has become firm.

Nov. 23d. The inflammation of the knee has so far subsided as to allow the patient to be removed to the hospital at Washington.

The height from which this man fell (thirty-four feet) would in all probability have produced sudden death if the whole weight had come on the head, without being first received on the hands and feet. As it was, the unconscious condition, insensibility, coldness of the extremities, and feeble and irregular pulse (pupils could not be examined), seven hours after the accident, show that the concussion was severe.

On the third day the patient had rallied from the shock. He did not go on to complete recovery, but passed beyond the bounds of health when, on the seventh day, there was increased pain in the head, muttering delirium, pulse 120, full and strong. On the ninth day there was great improvement, and a slight recurrence of unfavorable symptoms on the eleventh. After this recovery was constant, and he might be considered convalescent on the twenty-second day. Morphia has been used from the first to allay irritability, giving relief without unfavorable effects to the brain.

This case was deliberately given up as hopeless by the first physicians who were called, but the result shows that in all cases there is hope of rallying the powers of nature as long as life exists.

PROCEEDINGS OF SOCIETIES.

NEW YORK PATHOLOGICAL SOCIETY.

Stated Meeting, November 22, 1865.

Dr. GURDON BUCK, President, in the Chair.

Dr. KRACKOWIZER stated that the patient upon whom he had operated for the removal of the tumor in the antrum, and whose case he had reported at the last meeting, was doing well, no symptoms of meningitis having yet shown themselves.

FRACTURE OF BOTH MALLEOLI, WITH PARTIAL DISLOCATION OF THE TIBIA FORWARD AT ITS LOWER END—DR. F. H. HAMILTON.

Dr. HAMILTON presented a specimen of fracture of both malleoli and partial dislocation of the tibia forward, left leg. The specimen was obtained from the dead-room of Bellevue Hospital, and its history was unknown. Before dissection the deformity was observed; the foot being shortened in front of the tibia, and the heel being correspondingly lengthened. The whole foot was splayed or turned outward.

The specimen showed the malleolus internus to have been broken at its base and displaced slightly outwards (to the fibular side), and considerably displaced backwards. The malleolus internus was broken about one inch and a half above its lower end, and displaced outwards and backwards. The displacement backwards gave the fragment an inclination of 45° with the natural axis of the fibula. Both malleoli were firmly united at the points of fracture. The tibia was displaced forwards three-quarters of an inch, so that only the posterior half of its articular surface rested upon the articular surface of the astragalus, and at this point the astragalus had formed for itself a new cup-like socket in the lower end of the tibia, half an inch in depth, presenting an appearance somewhat as if the posterior lip of the articular surface of the tibia had been broken off and forced upwards. It seemed more probable, however, that this new socket was the result of long continued pressure.

Dr. Hamilton also mentioned that, by a singular coincidence, he had, at this moment, in his service at the Bellevue Hospital, a precisely similar case in the living subject. A woman had fallen, on the 3d of November, from one of the street cars while it was in motion. She could not tell in what way she fell. A day or two later she was admitted to Bellevue. The limb was greatly swollen, but a fracture of the fibula was made out—the fracture being $1\frac{1}{2}$ inches above its lower end, and the line of fracture being from behind, forwards and downwards. The foot was apparently not out of line. No dressings were applied on account of the swelling. November 14th, the 11th day after the accident, the foot was found to present a distorted appearance, such as is presented in a partial forward luxation of the lower end of the tibia. The top of the foot, measuring from the front of the tibia to the end of the great toe, was shortened a little more than half an inch. The heel was correspondingly lengthened, and posterior line at the lower part of the leg presented a remarkable curve, with its convexity forwards. The inner malleolus was found also to be broken at its base. Both malleoli remained attached to the foot, being directly downwards and backwards. The foot could be brought to a right angle by dorsal flexion, but no further. There was neither eversion nor inversion of the foot.

Dr. Hamilton remarked that he should attempt the reduction on the following day. He also remarked that these were the first examples he had ever met with of the partial forward luxation of the lower end of the tibia, either with or without a fracture of the malleoli.[1]

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[1] Dr. Hamilton informs us that on Thursday, the 23d of Nov., 13 days after the accident, he reduced the bones in the presence of the Chair and several medical gentlemen. The patient was placed under the influence of ether,

Dr. Voss remarked that he had met quite recently with a similar case, and gave its history as follows:

A young man, 25 years of age, in handling a heavy cask, slipped upon his right foot, so as to turn it outwards, the cask at the same time striking the tibia. The accident was followed by great swelling and discoloration. The treatment had consisted in merely cold water applications and rest. At the time Dr. Voss first saw the patient, which was eleven months after the injury, the following condition of the parts presented itself: the foot was at a right angle to the tibia, and could not be moved by dorsal flexion without giving rise to pain. The perpendicular axis of the foot was external to that of the tibia. The space between the two malleoli was greater by half an inch than on the opposite side. There was a marked projection of the heel backward, so that the distance between the apex of the great toe and the anterior border of the tibio-tarsal articulation was three-fifths of an inch less than in the sound foot. The tibia showed no trace of fracture; the external malleolus of the fibula was fractured off obliquely downwards and forwards an inch above the articular surface of the tibia. The anterior border of the malleolus was of course not involved. The projection backward of the fragment was certainly greater on account of the deposition of callus than it had been immediately after the injury.

Dr. Buck remarked that he had frequently seen the same deformity as shown by Dr. Hamilton, the ultimate result of what had originally been Pott's fracture. In such cases the malleolar process of the tibia

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when, by flexing the leg upon the thigh, and by extension made by the hands, with forcible flexion and extension of the foot, the bones were returned to place. In order to retain them in place, the heel was suspended by a broad cotton bandage in a box, while the tibia was pressed backwards by a similar band crossing the front of the leg near its lower end, and secured behind the box. This answered the indications, while at the same time the leg was not ligated. The whole thigh and leg were afterwards retained in a flexed position.

Dr. Hamilton is now fully of the opinion that this displacement was a consequence of the strong and continued action of the gastrocnemii; that it did not take place immediately upon the occurrence of the fracture, and probably not until the 10th or 11th day after the accident. Although his own experience and the museum specimens would prove that this peculiar backward displacement of the astragalus does not actually accompany or follow fractures of both malleoli, yet these examples and Dr. Buck's experience, with the case mentioned by Dr. Voss, sufficiently show that it is liable to occur; and that this fact establishes the propriety of considering the prevention of this result as one of the important indications of treatment after such fractures.

is torn off by the lateral ligament still retaining its connections, which permits the action of the muscles of the calf which slide the foot backwards on the tibia; for the same reason there is more or less slipping of the foot outwards, a certain inclination of the sole outwards, as well as a pointing of the toes downwards. He also stated that there was a plaster-cast in the museum of the N. Y. Hospital which illustrated those particular features in a striking manner.

Dr. Hamilton stated that he had never had his attention particularly directed to the point referred to by Dr. Buck, and in the specimen presented that evening he was not by any means certain whether the injury resulting in the deformity shown was really a primary or secondary one. He presumed, however, that Dr. Buck was correct in his explanation as applied to a large proportion of the cases.

ANEURISM OF THE ARCH OF THE AORTA—DR. BRADLEY.

John Hays, aged 31 years, was private in a regiment. About eight months ago, while assisting to remove a wheel from one of the gun-carriages, he felt something give way in his thorax. In a few days afterwards a small tumor made its appearance, just at the upper part of the sternum. It gave him some pain, and rendered him unfit for duty most of the time. The tumor increased in size, and he finally got his discharge on account of it. Shortly after his arrival in this city, he presented himself at the Demilt Dispensary for advice. He soon became unable to attend the Dispensary, and the visiting physician was called upon to attend him. When I first saw the patient, on the 27th of August, the aneurism was about the size of half a cocoanut. There were three prominent points on its surface which were discolored and very thin, and to all appearance would give way in a few hours. But these spots gradually assumed the color of the healthy skin again, and remained so for two weeks.

All this time the tumor was augmenting in size. On the 1st of November I was sent for, and found the patient suffering intense pain. One of the prominences had become again discolored, and very much distended. On the 19th Dr. Bradley measured the tumor with a tape line, and found it thirty-two inches round the base. On the 18th it opened, and discharged about three pints of blood, after which he sank rapidly, and died on the 20th, without any further hemorrhage. The only treatment he received at my hands was palliative sol. morph., two tablespoonfuls at a dose.

Dr. Post presented two specimens, the first a calculus, removed from the bladder of a patient after death, with no history, and remarkable for its large size, being seven inches in one circumference and five and a half in another, and resembling in shape an old fashioned watch; the second, a specimen of necrosis of the tibia. This latter presented somewhat remarkable features. It occupied the lower portion of the bone, and extended fairly down to the articular surface, so that the openings in the involucrum communicated with the cavity of what was the ankle joint through the cancellous structure of the lower and expanded portion of the tibia. The ankle joint itself was the seat of complete bony anchylosis with the astragalus. The specimen was removed by amputation from a patient 12 years of age, by Dr. G. H. Hosmer. The anchylosis seemed to have been an effort on the part of nature to limit the disease. In conclusion, he remarked that the specimen was particularly interesting, in reference to the fact that the necrosis was not limited to the compact structure of the bone, as was almost always the case, but had extended fairly into the spongy structure, presenting, in that situation, the characteristic appearances of a true sequestrum.

Stated Meeting, December 13th, 1865.

Dr. Gurdon Buck, President, in the Chair.

Dr. Hamilton remarked, in reference to the case of dislocation of the foot upon the tibia, reported at the last meeting, that the peculiar deformity to which he alluded was really induced as Dr. Buck had explained, and that the condition obtained only a day before his attention was directed to the case by the House Surgeon, the patient originally suffering from Potts' fracture.

MALIGNANT DISEASE OF SUPERIOR MAXILLA; EXTIRPATION; DEATH FROM RUPTURE OF ENCEPHALOID MASS IN LUNGS—DR. HAMILTON.

James Teshum, æt. 32, native of New York, farmer, was admitted to Bellevue Hospital, as a private patient of Dr. Hamilton's, November 24th, 1865. It was difficult to get a complete history of his case, as his disease prevented him from talking a great deal. As far as his statement could be made out, the disease commenced about five weeks before admission, by a small swelling on the gum above the middle incisor teeth; it grew very rapidly, and was twice removed within two weeks. His general health did not suffer much, his appetite was good, and he felt quite strong. Cancerous cachexia not marked.

A fungoid mass was found protruding from the mouth, occupying the space between the first bicuspid teeth of each side of the upper jaw; its base extended into the mouth, to a short distance behind the alveoli, and to about the same distance beneath the upper lip. The lip was not involved, nor did the disease extend to the antrum. The mass was excessively vascular, bleeding on the slightest touch. Two teeth were found loosely attached to the external surface of the tumor. He had a large vascular nævus covering the upper part of the left cheek, upon two or three points of which malignant disease had commenced to show itself. He had, also, a very large hydrocele; but this was not observed until he was laid upon the table for operation.

The patient wished to have the tumor removed, and the operation was made on Tuesday, Nov. 28th, by Dr. Hamilton, assisted by Dr. Wood, in presence of the class of medical students. It was with great difficulty that the patient was etherized. A large quantity of ether was administered, and finally some chloroform had to be given before he became completely insensible; and when he came under the influence of the anæsthetic he had a very small, weak pulse, which remained in that condition during the operation, although he was not all the time profoundly etherized.

The operation was commenced by two incisions beginning at each angle of the mouth, extending upwards and outwards about two inches. Two teeth were then extracted on each side, beyond the tumor, and the bone divided vertically, in this situation, with the bone-cutters. The bone was then cut horizontally by a saw, above the tumor, connecting the two incisions made by the bone-cutters; the bone-cutters were again applied to the roof of the mouth and the mass removed. There was considerable blood lost, though the hemorrhage was not so great as was expected, considering the nature of the disease. The whole of the nævus was finally removed from the cheek; but it was not deemed expedient at that time, owing to the feeble condition of the patient, to make a plastic operation to cover in the part laid bare by the removal of the nævus.

He rallied well after the operation, and in a short time he had a good and moderately strong pulse; he took his nourishment well during the day, and complained only of feeling sick from the ether. Next morning the patient felt very well; he had a good pulse, and rested well during the night.

Dr. Hamilton then determined to close the opening left in the cheek by the removal of the nævns. In etherizing the patient for this operation, he came completely under its influence before he had taken more than a half-dozen inspirations, and immediately his face became pale and his pulse small and weak, in which condition he remained until the effects of the ether passed off.

The operation consisted in taking a piece of sound integument from the cheek beyond the wound, and covering in the part laid bare by the removal of the nævus. He again rallied well, and soon regained a good pulse. He did well during the day, but in the evening he became very restless, complained of severe pain in his left side, his pulse and respiration became hurried, and he appeared to suffer a great deal. Physical examination revealed the presence of a quantity of fluid in the pleural cavity. He grew very much worse during the night; his pulse became small and frequent. He sank very quickly, and died about eleven o'clock the next morning.

Autopsy twenty-four hours after death.—On opening the thorax, about two quarts of almost pure blood were found in the left pleural cavity. Both lungs were found studded with nodules, resembling in structure the tumor removed from the face, varying in size from a marble to a walnut; and at the lower part of the base of the left lung a rupture was found in the lung tissue, at the seat of one of the nodules. One small nodule was found on the surface of the heart. The liver was healthy, except one small nodule on the surface of the great lobe. The brain was not examined. The kidneys were healthy. A large tumor was found in the mesentery. On opening the scrotum about a quart of fluid escaped, and the rest of the tumor was made up of enlarged testicle, the testicle being of about the size of a cocoa-nut, its entire structure being encephaloid.

DOUBLE AMPUTATION OF ARMS, CIRCULAR AND FLAP; DEATH FROM PYÆMIA ON THE 20TH DAY—DR. F. H. HAMILTON.

Tobias Dilling, æt. 24, native of Jamaica, machinist, was admitted to Bellevue Hospital, November 21st, 1865. About two hours before admission, both of his arms having been caught in some machinery, the bones of the hand were extensively crushed, and the soft parts of the forearm and part of the arm were extensively lacerated. The two arms were, as nearly as possible, in the same condition. Both arms were amputated by Dr. Hamilton, about six hours after the receipt of the injury. The operations were made while the patient was under the influence of ether. The left arm was first amputated by the circular operation, and then the right by double lateral flaps. Very little blood was lost, and the patient rallied well after the operation. During the first twenty-four hours he suffered some pain in the stumps, but it was not severe. For the next twelve days he continued to do remarkably well. He always reported feeling very well; his appetite was good, and his pulse strong, and not beating over 100 per minute, and sometimes it was below 90. He would lift up the stumps to have them dressed; and he asked, about eight days after the operation, to be allowed to sit up. There was some union by first intention at the upper part of both stumps; the cut was covered with healthy granulation. The discharge was normal in quantity, and very healthy—the right stump discharging always about twice as much as the left.

On December 4th, twelve days after the operation, he had a very severe chill, followed by profuse sweating. He had another chill the same day, and in a short time became very much exhausted; his pulse became frequent, 130, his tongue coated, and his appetite impaired. He had irregular chills followed by profuse perspiration during the next four days, becoming gradually more exhausted. He suffered occasionaly from severe vomiting and diarrhœa. On the fifth day after his first chill, and seventeenth after the operation, he became delirious, and complained of pain in his left side. His pulse now became very rapid and weak, and he sank and died on the 11th inst. After the occurrence of the chills there never was any noticeable change in the condition of the stumps; the granulation seemed plentiful, but rather pale. The discharge was not much, if at all, increased, and was tolerably healthy. There was no unusual swelling or inflammation in any part of the limbs. The end of the bone could be seen just within the flaps in the left arm. The granulations covering it had a dark brownish appearance. The patient was a finely developed, muscular man, had always enjoyed good health, and was never addicted to excesses of any kind.

Autopsy, 18 *hours after death.*—The lower lobe of the left lung was covered with recent lymph, and the left pleural cavity contained about twelve ounces of semi-purulent fluid. There was a small abscess in the lower part of the left lung, and an abscess in the great lobe of the liver. There were small spots of lobular pneumonia in both lungs. The kidneys appeared fatty; the other organs were healthy. Both stumps had almost united, and no abnormal appearance was noticeable in the soft parts of either of them. A small brownish looking mass protruded from the medullary cavity of the bone of the left arm.

The two amputations were made in this case by dissimilar methods for the purpose of observing their relative progress. The condition of the two arms was, as nearly as possible, the same, and the amputations were made at almost the same points, and equal care was taken in the two operations and in the dressings. The flap operation required the most ligatures and the most sutures. Both had, at the time of death, made about equal progress in cicatrization, being three-fourths closed; in both the death of the ends of the bones had extended about three-fourths of an inch. In both there was osteomyelitis. The only difference observed was, that at each dressing the right stump (double flap muscular) was found to be discharging about twice as much pus as the left (circular and tegumentary). In both limbs the flaps were long, and brought together without the least strain.

In answer to a question from Dr. Buck, Dr. Hamilton remarked that pain in the stumps was not a noticeable symptom.

Dr. Buck referred to a case of osteo-myelitis occurring, after amputation of the arm, in a lad aged 15, a patient in the New York Hospital, in whom pain in the stump was very severe. In that instance, too, the fungous growth from the medullary canal was greater than he had seen in any other case, exceeding an inch in length. This growth, after having been removed, was reproduced almost to its original size. The patient ultimately recovered, and a tubular sequestrum was removed some months afterwards.

CANCER OF THE TESTICLE—DR. H. B. SANDS.

Dr. Sands presented a specimen of cancer of the testicle, with the following account of the case.

The specimen has nothing peculiar in its pathological anatomy, and the interest of it, if any, lies in its history.

The specimen was removed, at post mortem examination, from the body of a patient whose brother had been under the care of Dr. Parker, the early part of the present year, for the treatment of cancer of the testicle. A careful inquiry was made into the family history, when it appeared that the great-grandmother, or maternal head of the family, died of a tumor of the breast, which had been pronounced to be cancerous, and that the mother's aunt had also died of the same disease; two operations for extirpation of the disease having been performed during her lifetime. The brother of the patient contracted gonorrhœa while serving in the army, and subsequently had what was thought to be gonorrhœal epidydimitis. He was treated for this and partly regained his health; he never, however, got entirely well. Last November his health failed so much that he was unable to follow any occupation. I saw him first in the early part of February last. He then came from where he lived in order to have the right testicle removed, which was the one affected with disease. Dr. Parker removed it, and I examined it; it was undoubtedly cancerons. Very soon after a swelling underneath the ribs on the left side made its appearance and increased very rapidly, destroying life at the end of two months after the cancerous organ had been removed. The post mortem disclosed an enormous growth from the lumbar glands, to which the under surface of the liver and posterior surface of the stomach were adherent. I might remark, in this latter connection, that the patient had obstinate vomiting as one of his symptoms.

At the time this gentleman died, his brother, a young man, aged 24, was in tolerably good health. My attention was first called to him last August, when he told me that he had gonorrhœa at the time of his brother's death. Soon after he had a swelling of the testicle, which, slight at first, slowly increased Not consulting a regular physician, he went to a water-cure establishment. He submitted to the ordinary treatment there and grew worse. He afterwards was visited by a homœopathic physician, who removed him from the water-cure, and sent word to his mother that he was dangerously sick. He was under the care of this physician until I saw him, in August last. At that time the right testicle was enlarged by a well defined swelling, and was solid, except in front. No extension of the disease could be found along the cord, but in the right iliac fossa there were enlarged glands. The patient had a cachectic appearance, but I was unable to decide whether this was due to the local disease which was present or to the rigid discipline of the water-cure establishment. He also confessed to having had syphilis, in confirmation of which were to be seen suspicious copper colored spots on both forearms. I could hardly, at that time, imagine that it was another case of cancer. The patient went to Newport, and remained there until the latter part of September. In October I saw him again, when I found a new development in the shape of a tumor in the left supra-clavicular region. Although the swelling in the inguinal region and in the testicle were the same, his cachectic look was more marked than before. I had no hesitation then in expressing the opinion that the disease was cancerous. A consultation was soon after called, and several gentleman saw him with me, Drs. Krackowizer, Peters, Parker and Markoe. At that consultation he was carefully examined, and some additional swellings were found in the abdominal cavity, deep-seated, being situated along the lumbar spine. The superficial abdominal veins were markedly distended. Some of the gentlemen thought the disease cancerous, others were divided between cancer and syphilis, while one of the gentleman had a very decided opinion that the disease was syphilitic. This being the most favorable view taken of the case it was eagerly accepted by the friends, and the appropriate treatment for that disease was forthwith begun, which consisted of the iodide of potassium and of soda, with iron and some stomachic bitters. Under this treatment he improved at one time slightly, so that he was able to ride out and dine at a restaurant, and he also went out and took a drive between two and three weeks of his death. He afterwards was unable to go out any more, and kept his bed. His pain, which was referred chiefly to the abdomen, was relieved by the administration of morphine, hypodermically. He grew worse; the swelling in the neck increased in size, as did also those in the abdomen. The tumor in the testis remained stationary. About ten days previous to his death, violent vomiting took place as the result of a late supper; this accident, however, did not again occur. He emaciated after this with extreme rapidity, and soon died.

On post mortem examination, a small amount of fluid was found in the tunica vaginalis, in front of the testicle—I should say not more than an ounce. The testicle and epidydimis is here seen to be the seat of a morbid deposit, presenting a very good example of soft cancer of these organs. The inguinal swelling was found to be encephaloid, as was also the case with the swellings higher up. Cancerous deposit was also found in the liver, in both lungs, and in the bronchial glands. The cancerous appearances of these organs were unquestionable; so much so that the gentleman who thought the case one of syphilis modified his opinion, and believed it to be one of cancer modified by syphilis. The swelling of the testicle during life was extremely firm, and I was led to think that it might be one of those rare examples of hard cancer. Two or three weeks before the patient's death there was pain in the right side, attended with a friction sound. There was, however, nothing to explain these symptoms, except the rubbing of the cancerous nodules in the lung against the parietes of the chest.

I present this specimen on account of the obscurity in the diagnosis, and because I thought it would be interesting to the Society to know of two such examples of the disease occurring in the same parts of the body, in two brothers, within such a short period.

I would like to ask a question in regard to the importance to be attached to the presence of enlarged inguinal glands in suspicious tumor of the testicle, as I have never seen any ordinary epidydimitis attended with these enlargements. When I saw these swellings it made the case, to my mind, at least, suspicious. The abdominal tumors originating in the lumbar region were not perceptible to the touch. The kidneys were not particularly examined, as all the abdominal organs were more or less matted together.

Dr. Krackowizer stated that he had had occasion to see the patient often, and as he was the gentleman alluded to, who had made a diagnosis of syphilis, he wished to give the reasons which influenced him in coming to a decision. In the first place the patient had syphilis, which was shown by the copper colored spots in his skin. Secondly, the patient had noticed first an enlargement of the testicle after gonorrhœa, this swelling being followed by swelling of the inguinal glands, the lumbar glands being then uninvolved. In October there was simply an increase in size of the right lumbar glands. Thirdly, the swelling in the cervical region was not only stationary for a long time, but actually showed a tendency to recede. Fourthly, the swelling in the testicle remained stationary. He could not positively settle in his mind whether the testicle was actually involved or not, and was inclined to believe that the whole of the enlarged mass was simply epidydimitis, which, like a cup, shrouded the testicle, leaving free only the anterior part of the tunica vaginalis, which was filled with liquid. If it were cancerous disease, he thought it curious that it should end abruptly at the cord. It seemed also curious that, coincident with the enlargement in the testicle, the inguinal glands should swell, leaving the lumbar glands free, the latter being the only organs which receive lymphatics from the testicle. Nor was there any thing in the patient's condition which looked like what we occasionally see in others who may be afflicted with malignant disease. He held the view that it was not cancerous up to three weeks of the patient's death, when the great and rapid enlargement of the lumbar glands made it more probable that he was mistaken.

In answer to a question from Dr. Buck, as to the precise situation of the inguinal glands, Dr. Sands stated that they were external to the inguinal canal, and near the anterior superior spine of the ilium.

Dr. Buck remarked that enlarged glands in the inguinal region, as in Dr. Sands' case, were very suspicious, and recalled, in that connection, a case in which the testicle was at first removed for malignant disease, by Dr. Parker, with an apparent good effect for a time, when the disease reappeared and attacked the inguinal glands, terminating fatally. He did not remember to have met with any case of epidydimitis where there was any glandular enlargement.

DISEASE OF THE HEART—DR. ALONZO CLARK.

Dr. Clark presented a specimen of interesting disease of the heart, the account of which he gave as follows:

It will be observed, first, that the heart is considerably enlarged—that it has a moderate amount of fatty deposit on the outside, and that the right ventricle is about its normal size, appearing, however, as if it had been encroached upon a little by the septum ventriculorum. The left ventricle is of considerable size, its walls being hypertrophied, and in addition to its being larger in size than usual, a pouch is formed in it, extending downward and to the right, which, of itself, is about the size of the normal ventricle (you may call it a false aneurism of the left ventricle); but most curious of all, at the bottom of this aneurismal pouch there is a plate of calcareous matter, which forms an almost complete floor for it. This plate of bone is two inches and a half in extent from below upward, and nearly two inches in width across the surface of the heart, of considerable thickness, and seems to have served in a good degree as a protection against the bursting of this portion of the heart. In addition, the pericardium was attached to all the thin surface of the structure, and the bony plate seems to lie, as I thought, the other day, nearly under the pericardium; now it appears within the wall of the heart, and nearer the inner surface. The pericardium was attached at no other spot, only over this particular space where the aneurismal pouch is extending.

Dr. Edgerton has drawn up the history of the case, which, however, does not give much of an explanation for the post mortem appearances of the specimen; indeed, the disease of the heart was not recognized, notwithstanding the patient had been in the hospital two or three different times. There is, however, one point in the history brought out by the report which is of some interest.

The following is Dr. Edgerton's account:

"Frederick Norcom, a lawyer, aged 56 years, was admitted to Ward 8 of Bellevue Hospital, November 27th, 1865, this being the fifth time he had been an inmate of the institution within the last two years. He had paralysis of the right side of the body, which, he said, he had had for twelve years. He was able to walk by the aid of a cane, but his gait was something irregular. He had very little use of his arm, and almost complete loss of voice. He complained little, and was up about the ward during the day. On December 9th, seeming to be as well as usual, he went into the bath-room adjoining the ward, fell in an apoplectic attack and died before the doctor reached him. On post mortem examination (December 10th) a superficial clot was found upon the convexity of the brain, near the posterior superior angle of the right parietal bone. There was considerable sub-arachnoid effusion, with opacity of the arachnoid membrane. The left lateral ventricle was filled with serum, while the right contained the normal amount. The arteries at the base exhibited patches of atheroma. A careful examination failed to discover a cicatrix denoting any previous effusion. The cerebellum was softened. The lungs, liver and spleen were healthy. The heart and kidneys I send with this. The pericardium was adherent to the diseased portion of the walls. I never examined his heart while living, and am unable to ascertain from the hospital register that the cardiac disease was recognized at any time when he was in the hospital before. The kidneys weighed nine ounces; the weight of the heart is twenty ounces."

The point in this record that interested me was that while the patient was in a considerable degree paralytic from an old apoplectic effusion, the healing process had become so complete that the dissection that was made with that view failed to discover the position that it had occupied, yet there was not a restoration of the nerve force. The fact that he had been several times in the institution, and that attention had never been called to the heart from any complaint that he might make, is pretty conclusive that the aneurism was not disturbing him much. I have two or three specimens that are similar to this, in all of which the histories are not known—the condition of the organ having been only discovered after death. There is rarely such suffering during life as to induce an auscultatory examination. I have one specimen in which the heart is entirely encircled in a band from one and a half to two inches in breadth, taking an oblique course completely around the organ. I think this calcareous deposit is probably a conversion from an atheromatous deposit at that point of the heart where the aneurism began to expand.

Dr. Krackowizer, in reference to the protection which was afforded against the bursting of the heart at the particular point at which the calcareous deposit was found, remarked that, in his opinion, so far from preventing such an accident, the unyielding and sharp edges of the plate would be more apt to lacerate the edges of the organ in contact with it, than would the centre of the plate by its firmness be a safeguard against it.

HYPERTROPHY OF THE PYLORUS—DR. A. CLARK.

Dr. Clark next gave the following account of a case from which a specimen had been sent him by Dr. Clarke, of Perry, for microscopic examination. The history of the case had been communicated by letter, and the specimen was said to be taken from the pyloric orifice of the stomach of a man aged seventy. The letter then goes on to state:

"He was a fair liver, strong and muscular, and appeared to enjoy good health. About four months previous to his death he began to complain of loss of appetite, and a torpid state of the bowels, which gradually increased up to the time I saw him, which was about two weeks previous to his death. He had commenced to vomit (which would be soon after taking food), and the vomiting gradually increased until he got so that he 'cast up' every time he took any thing in the stomach. During all his illness he did not complain of the least pain.

"On opening the abdomen and raising up the stomach it was found adherent to the lower margin of the liver (which was attributed to a sickness thirteen years previous). The stomach was very much expanded, and the walls very thin, save at the pylorus, which was hard and cartilaginous to the feel. The stomach was taken out entire, and the finger could easily pass from the intestine into the organ. We then pressed out the contents of the stomach through the pyloric orifice, which would flow in a stream not to exceed the size of a small goose quill. I then opened the stomach, which looked healthy save at the pylorus, which was much thickened, very dense to the feel, and cut firm. The appearance was very dark and muddy, and this specimen was loosely adherent in this loose floculent condition, and close to the passage. Portions of this specimen had been vomited. * * * * * * * * The liver was crowded with nodules, varying in size from a small pea to a large black walnut, after the removal of the shuck. On opening them they presented a light, grayish appearance. No impression could be made on them by pressure."

Dr. Clark gave it as his impression that the nodules spoken of as occurring in the liver were cancerous in character; but the interest in the case was connected with the specimen itself, which he, after due preparation, submitted to the microscope. There was not a particle of cancer in it, but it was found to be made up of the secreting tubes of the stomach, and the growth was nothing more than an hypertrophied state of a healthy structure, provoked, doubtless, by the disease in its neighborhood—that disease being probably not confined alone to the liver, but extending to the pylorus of the stomach as well.

TUMOR OF THE SCIATIC NERVE—DR. DRAPER.

Dr. DRAPER, on behalf of the committee appointed to examine the specimen presented by Dr. Sayre at a previous meeting, and supposed to be an osseous growth connected with the sheath of the sciatic nerve, made the following report:

I submitted this mass to both a microscopical and chemical examination. I find it made up of a mass of calcareous substance, composed of carbonate and phosphate of lime. I succeeded in making a section of the external portion of the tumor, which is more dense than the internal part, and ground it down sufficiently thin to examine it with the microscope, but it presented no evidences whatever of bone; there was simply to be seen a coarsely granular basis, with irregular masses of the calcareous matter diffused through it. I find no record of any neuromatous tumors undergoing this particular kind of degeneration; I searched through Robert Smith's work on neuromatous tumors, and he does not make mention of a single instance.

I should mention that the patient from whom this specimen was taken died of phthisis, about a fortnight after the tumor was removed; and it is possible that this change was connected, in some way, with the tendency to calcareous degeneration, which occurs in this disease.

EMPHYSEMA OF THE LUNGS AND ENLARGEMENT OF THE RIGHT HEART—DR. DRAPER.

Dr. DRAPER next exhibited a specimen, the history of which he gave, as follows:

This specimen does not present, so far as its lesion is concerned, any great novelty; but from the degree to which it is developed, I think it has some interest. The specimen was taken from a patient in the hospital, a week ago last Tuesday, during my visit, and no history was at first obtained as to his disease. I found him suffering from great dyspnœa, his face very much swollen, his whole body anasarcous, and the veins of the head and neck extremely turgid, with the evidences everywhere of venous obstruction very marked. My first impression was, from looking at the man, and having no history of his case, that he was suffering from embolism, probably of the pulmonary artery or vein; but on examining him I found that he had been a sufferer, for eight or nine years, from asthma and chronic bronchitis, and that this was all he could tell me. On physical examination, I found that the chest anteriorly was remarkably well developed, the infra-clavicular spaces being somewhat more than ordinarily protuberant. On percussing in this region there was more than the usual resonance. Posteriorly the resonanee was considerably diminished, and there were very distinct evidenees of œdema of the lungs, with congestion. On examining the heart, I found that the apex beat in the sixth intercostal spaee, just inside of the nipple, but that the area of cardiac dullness was extended to the right of the sternum. The auscultatory phenomena in front were sueh as might be anticipated from the degree cf emphysema evident from the percussion. The inspiratory murmur was somewhat feeble; the expiratory murmur was prolonged. The urine was albuminons to a very considerable extent. He survived two or three days, and finally succumbed to the dyspnœa, and to the effect of the imperfeetly aerated blood.

On examination, this enormous amount of emphysema was discovered upon the anterior surfaee of the lungs; it does not, however, even show as well as when these organs were at first removed. The enlargement of the middle lobe of the right lung is, as you see here, converted into a multiloeular sae of very unusual size; and upon the inferior margin of the left lung there are two or three very large air eells.

But, perhaps, the chief point of interest is connected with the heart as the direct consequence of this amount of emphysema. The right cavities of the heart have undergone very considerable distension. It will be seen that the organ is very cousiderably enlarged, but this enlargement is mainly in its right cavities. The walls of the right ventriele are thiekened, and the capacity of that ventriele very much increased. The valves of the pulmonary artery are perfectly healthy, though I suspect that they allowed a regurgitation during life. It is evident that the trieuspid valves were insufficient, and that they allowed a free regnrgitation into the right auriele, which is very much distended, and that, as a consequence of this distension of the right cavities of the organ and the free regurgitation, the venous eireulation was very much obstrueted. The valves were healthy and the heart souuds normal, exeept that the second sound was feeble.

Dr. Clark remarked that the emphysema was quite extraordinary, but the most interesting part of the speeimen had reference to the reflex aetiou whieh the slow circnlation of the lungs had upon the right ventriele, and in that eonnection referred to a point that might perhaps explain the reason why there were no murmurs, notwithstanding there might have been regnrgitation. He stated that some twenty or twenty-five years ago, Dr. King, of London, demonstrated, as he supposed, what he ealled the "safety-valve offiee of the tricuspid," showing that regurgitation would take place there when the right ventriele was overloaded, without giving any murmur. "The frequency," said Dr. C., "with which we discover pulsation in the veins of the neck, and no murmur in the heart, would lend a good deal to the fact."

Dr. Draper stated that the pulsation in the veins of the neck was very marked.

Dr. Parker asked if an hypertrophied left auricle, as the result of mitral regurgitative disease, might not be capable of giving rise to the pulsations in the veins of the neck by communicating an impulse through the septum auriculorum.

Dr. Clark could not conceive of the existence of such a state of things in the production of such phenomena.

Dr. Draper referred, in answer to the question, to a case of mitral obstruction with distension of the right auricle, in which there was no venous pulsation.

Dr. Jacobi had always been accustomed to look upon venous pulsation in the neck as a sign of incompetency of the tricuspid valve, and did not believe that there could be any connection between one auricle and the other, even when the septum auriculorum was incomplete; as at the same moment both auricles were filled and at the same moment both contracted, and each column of blood balanced the other.

Dr. Clark believed that this perfect balancing of the two columns of blood was only the case when the heart's action was not in any way disturbed, and in illustration of the fact referred to the case of a woman, aged 40, a patient of Bellevue, who evidently had deformity of the septum from birth, but who gave no sign of the disease until she suffered from an attack of pneumonia. She recovered from the pneumonia, but the cyanotic condition continued until her death, which took place in the course of a year.

Dr. Draper stated that the case transpired during the time that he was an interne of the hospital. Bronchitis supervened upon the pneumonia, and was attended with considerable expectoration. After death her lungs were found very much congested, but there were no traces of pneumonia left.

Dr. Jacobi maintained that the proper balancing of the two columns of blood consisted in each half of the heart doing its own work, and in order that this should be done the left side was thicker than the right. Each side of the heart performed its own particular duty, and the strength of each was proportioned to the labor of each.

Dr. Hamilton could not conceive how the two columns of blood could be kept so exactly balanced when there was a defect in one of the septa, as the increased force in the left ventricle, which was necessary to send the blood through the whole arterial system, would be most apt to be felt at the starting point of the power, and would allow, under the circumstance, some arterial blood to enter the other ventricle.

Dr. Post stated that even if such an admixture did take place, arterial blood in the right ventricle would only give the lungs so much less to do in aerating it; an opinion also concurred in by Dr. Bibbins.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Lectures on Epilepsy, Pain, Paralysis and other Disorders of the Nervous System. By Charles Bland Radcliffe, M.D., F.R.C.P.L., Physician to the Westminster Hospital and to the National Hospital for the Paralyzed and Epileptic, etc. Philadelphia: Lindsay & Blakiston. 1866. 12mo, pp. 280.

In 1851 Dr. Radcliffe published his "Philosophy of Vital Motion," in which he attempted (1) to show the necessity of a revision of the current theory of muscular action—that muscle is endowed with a vital property of contractility—that muscular contraction is the sign of vital excitement of this property—and that when in excess, whether voluntarily or involuntarily, it betokens excessive vital excitement in this property; (2) to set up a purely physical theory of muscular motion as the true one, and that the action of the blood and of so-called "nervous influence" in its production is, not by acting as *stimuli* to a vital property of irritability in nerve and muscle, but by altering, in a definite and intelligible manner, the electric condition of the nerve and muscle. These views were subsequently maintained in the several editions of his work on "Epileptic and other Convulsive Affections of the Nervous System," and his Gulstonian Lectures for 1860. Dr. Radcliffe finds that he is now able to "support these convictions by much additional evidence—by evidence which is indispensable as well as new;" and which, he seems to think, will establish the truth of the principle for which he is doing battle. If a radical error prevails in the accepted physiology of muscular motion, it follows that a fundamental change is required in the treatment of all disorders of the nervous system which are characterized by convulsion or pain, or by any symptom analogous to convulsion or pain, and this is one of the aims our author has in view.

In his remarks upon the physiology of muscular motion, Dr. Radcliffe begins from a new starting point:

"I have to show that the natural electricity of muscle and nerve, during the state of rest, is in a statical, and not in a current condition—a condition which is no other than that of tension. I have to show that the electrical discharge, analogous to that of the torpedo, which M. Matteucci has shown to accompany muscular action, is essential to the interpretation of muscular action. I have to show, in short, that it is necessary to borrow light from the discoveries of M. Matteucci in natural electricity as well as from those of M. Du Bois-Reymond in the same department of science, in order to obtain a clear insight into the physiology of muscular motion, and into the pathology and therapeutics of convulsion, tremor and spasm; and that with this light, it is possible to find the truth by a much easier and shorter way, and to apprehend it with far greater distinctness." (Preface, p. xiii.)

According to our author, there is reason to believe that the theory which is applicable to ordinary muscular motion is applicable also to rythmical muscular motion—the beating of the heart, the peristaltic movements of the alimentary canal, and the respiratory movements of the chest.

In concluding this part of his subject, Dr. Radcliffe says:

"In my mind, the very strongest argument in favor of the theory of muscular motion set forth in these lectures is to be found in the fact that it leads us a step nearer to the discovery of a common law for organic and inorganic nature—a law to the existence of which the instincts and the discoveries of science alike bear testimony; a law which does not entomb life in matter, but which quickens matter into life, and surrounds life with a halo of divinity; for it is but a step from the discovery of a common law to the central point in which the immediate operation of the One Divine Lawgiver becomes visible in the law, to my mind; I say, the fact that this theory of muscular motion tends to bind a certain number of vital and physical phenomena together in a common bond is the very *experimentum crucis* in its favor" (p. 152-53).

For the present we are content with giving this general statement of the results of Dr. Radcliffe's physiological inquiries in his own words, and without comment, as we shall shortly have the opportunity of laying before our readers an abstract of the actual state of our knowledge of the functions of the nervous system, and shall then examine and discuss the leading views in currency on this and other points of general interest connected with the subject.

Passing, then, to the pathology of convulsion, tremor, and spasm—the conclusions being formed from the conditions of the functions of respiration, circulation, and innervation in each of these disorders—

we find the chief object of the author's inquiry to be, whether they are associated with exalted or depressed vitality. After a survey of the history of convulsion as it is commonly seen in epilepsy, in epileptiform disorder, in hysteria, and chorea, with a view to catch its common and constant features, the general conclusion is deduced, from the condition of the functions of respiration, circulation and innervation, "that the pathology of convulsion is as much in harmony with the view of muscular motion set forth in these lectures, as it is at variance with the current view on the subject;" that in fact convulsion is a sign of vital depression, and not a sign of vital excitement. "Every form of convulsion is ushered in by paleness of the countenance, by great feebleness of the pulse at the wrist, and by other signs of failure in the circulation; . . . the strong and full pulse, which so often accompanies the fully developed epileptic or epileptiform convulsion is a pulse of *black* blood, and not a pulse of *red* blood, the pulse of suffocation—the *apnœal* pulse, and not the pulse which owes its increased fullness and force to the increased injection of arterial blood into the vessel" (p. 191). "And that convulsion is never coincident with a state of active febrile excitement of the circulation; that it is associated with the cold stage before the hot stage, or with the cold stage after the hot stage, and never with the hot stage itself, . . . and it must not be looked upon as a consequence of active 'determination of blood to the head'" (p. 192).

As a rational conclusion, naturally flowing from the physiological and pathological premises, Dr. Radcliffe maintains, and we think—setting aside for the moment all theoretical views—to a large extent, justly, that the therapeutics of convulsion must be based upon the notion that vital power has to be reinforced. He thinks, in many cases of chronic convulsive disorders, the diet ought to be so regulated as to diminish the average fibrinous articles, and increase the usual allowance of fatty and oily matters; that suitable gymnastic exercises—especially those which act on and quicken the respiratory function—are very beneficial; the frequent use of purgatives should be avoided; bromide of potassium, cod-liver oil, and phosphorus—the best form for the exhibition of the latter being the *hyperphosphites* of soda, magnesia or lime—are valuable remedies; that belladonna, if pushed far enough to produce even a shadow of its physiological action, is more likely to do harm than good; that in some cases of convulsive disorder—where the brain is anæmic rather than hyperæmic—opium is a more suitable remedy than belladonna; that there is reason to doubt the efficacy of zinc as a remedy in epilepsy and kindred cases, and its prolonged use positively harmful by interfering with nutrition; and that, in cases of epilepsy and epileptiform convulsion, the brain may be so gorged with black blood, the abstracting of a small quantity of blood may be no wrong practice. The wider experience of the past four years has not shaken, but strengthened, the author's early convictions in the trustworthiness of the proper use of alcoholic stimulants in the prevention and treatment of convulsion. A case of aggravated chorea—one of four—is mentioned, in which there had been no sleep for five days and nights, and no cessation of the movements of any moment, in which a wine-glass of port-wine given every half hour, with an egg beaten up in the alternate doses, procured quiet and sleep in ten hours—a continuance of the same treatment, only in less vigorous style, leaving the patient well, so far as the chorea was concerned, in a week. That alcohol and its preparations control spasmodic disorders is indisputable. When we come to inquire into their mode of action we are beset with difficulties. The subject is full of interest and worthy of study. Do they act immediately on the central nerve-tissue by the blood, or is their primary effect produced upon the sympathetic? We know by the experiments of Cl. Bernard, Marey, and de Barrel de Pontevès, that the action of alcohol on the ganglionic system is sedative and even depressing—hence freeing the capillary vessels, lessening the degree of vaso-peripheral tension, increasing the cardiac impulsion, and quickening the general circulation. The investigations of Dr. Edward Smith show the different influences of several alcoholic drinks upon some of the functions of the human body—notably upon carbonic acid excretion—and further experimentation may enable us to make decided therapeutic distinctions between the various alcoholic preparations, with valuable practical application of the knowledge thus acquired.

In studying the history of common trembling, paralysis agitans, delirium tremens, the rigors and subsultus of fevers, and the shakings of slow mercurial poisoning, in the condition of the three great functions of respiration, circulation, and innervation, Dr. Radcliffe believes, as in convulsion, the obvious conclusion to be, that tremor is a sign of depressed, and not of exalted, vital energy. Hence its rational treatment "would seem to be that which avoids every cause of depression and exhaustion, which seeks after every means of increasing and establishing the strength, and which trusts to stimulants of one kind or another in any special emergency" (p. 224).

Spasm, too, as it occurs in catalepsy, tetanus, cholera, hydrophobia, spasmodic ergotism, and in certain diseases of the spinal cord, is found associated with insufficient respiratory activity, a depressed state of the circulation, a failure of brain-power, and is antagonized rather than favored by an excited state of the circulation or by inflammatory action in a nerve-centre. The key to its pathology, along with that of convulsion and tremor, is to be found in that view of the physiology of muscular motion advocated in this work, and at variance with the view according to which the excess of muscular contraction is owing to a corresponding excess in the stimulation of a vital property of irritability in nerve and muscle. "The physiology explains the pathology, and the pathology establishes the physiology" (p. 239). In harmony with this doctrine, it is evident the first and last indication of treatment should be to exalt and sustain vital energy in general, and nervous energy in particular; in a word, the treatment of spasm, convulsion, tremor and spasm must be based upon one and the same general principle.

"I have seen," says our author, "two cases in which strong and general tetanic spasms relaxed rapidly under a treatment in which the essential part was to give wine to a point just short of inebriation.[1] Nor do I see why a similar plan should not answer in hydrophobia, if it were carried out promptly and decisively. I do not see that it might not be perfectly justifiable to try and save the patient by making him drunk as rapidly as possible" (pp. 239–40).

Of the good effects of wine in laryngismus stridulus, spasmodic croup, and hooping-cough, Dr. Radcliffe has no doubt; and he is strongly disposed to think, that the unmanageableness of the last named disorder "has mainly arisen from the fact that wine and nutriment have been withheld, or administered with a niggard hand."

Having moved the "sleeping images of things toward the light," and shown that a fundamental change is necessary in the theory and treatment of all disorders of the nervous system characterized by convulsion, Dr. Radcliffe takes a step in advance of his former position, and undertakes to show the necessity of a reform in the physiology of sensation, and in the pathology and therapeutics of pain, which, he states, is either of a neuralgic character or depends on tenderness, the former being essential, and the latter accidental—the result of pressure, and generally associated with a congestive or inflammatory condition of the part. This line, he admits, "seems to be broken in some parts, and

[1] We have seen the alcohol and nutriment treatment in tetanus pretty fairly tried, but, unfortunately, with no beneficial result—except in one case, where it was associated with large doses of cannabis indica, the patient getting well.—[Rev.]

the two forms of pain interblend at these parts, and lose their distinctive characteristics" (p. 242). How, then, is this? We must refer to the author's notions respecting the physiology of sensation. The fact has been demonstrated by M. Du Bois-Reymond that a sentient nerve, like a motor nerve, loses electricity when it passes from the state of rest into that of action; while Matteucci's experiments prove that the change in a sensory nerve, when sensation is produced by the action of voltaic electricity, and the change in a motor nerve, when muscular contraction is produced by the same means, are exact equivalents; hence there is no essential difference between the action which issues in sensation, and the action which issues in muscular contraction; and the whole tenor of the evidence advanced leads to the conclusion that the problems of muscular motion and sensation are only to be solved when the agency of animal electricity is employed as the master-key.

To the author's pathological generalizations we, and, we suspect, most of our readers, will give a ready consent. Neuralgic pain is associated with a state of irritation in the nervous system, and not with a state of inflammatory excitement, which is a consequence and not a cause of the state of which it is a sign, and is to be regarded as indicative of defective vital power generally, and defective nerve power in particular.

The investigations of Ahrens, Nasse, and others show that the natural electroscopic evidences of animal electricity become very obscure or altogether wanting in the rheumatic condition, and thus give reason for the belief that the electrical relations of the exterior and interior of the nerve fibres at the seat of pain may be reversed generally or partially, preventing a state of statical tension—the reversal being apt to happen when the natural electricity of the nerves becomes very feeble. It is not, then, difficult to see how cold is favorable to the production of pain by preventing the production of electricity in the sensory nerves, and damp may bring about the same result by favoring the conduction of electricity away from the body. As a natural consequence, warmth and dryness may become of paramount importance in the treatment of nerve pain. The addition of oleaginous articles of food to the diet as the rule—lean meat nourishing the nerve too little—is insisted on, and properly. The neglect of this due adjustment between the fatty and fibrinous elements of food we have seen followed by serious disorder of the nervous system in several instances in carrying out Bantingism, together with an accumulation of the lithates in the system, impoverished blood, feeble digestion, and obstinate constipation. The limited endurance of prize-fighters, whose nerve tissue is starved during training for the ring, is well known. Sugar, in excess, is to be regarded as harmful in a neuralgic habit of body, and, we might add, in a gouty or rheumatic one. On practical as well as theoretical grounds Dr. Radcliffe is satisfied that "the proper use of alcoholic drinks is an essential part of the preventive and curative treatment." This "hot-grog treatment" should not be hastily resorted to in chronic cases, and should be warily used only when the physician is satisfied its employment is indispensable. While we do not admit alcoholic stimulants are "the natural corrective of the neuralgic habit, and the most trustworthy of all anodynes," their immediate effects are often relieving, and a habit of resorting to them is thus formed, resulting, too frequently, in the saddest consequences. We have known more than one melancholy instance of confirmed intemperance in women of good social position which could be laid at the door of this practice. The "proper use" of alcoholic drinks, insisted on by the author, is very difficult. Coffee and chocolate are to be preferred to tea as common beverages, the latter being too sedative. The habitual use of purgatives and aperients is condemned as a practice in persons of neuralgic habit, while cod-liver oil is recommended as a suitable tonic, and for the same reason that makes it expedient to increase the fatty articles of food. As a nerve-nourisher, phosphorus is often indicated. His conclusions respecting the electrical condition of the system which often obtains in neuralgia, led Dr. Radcliffe to hope that good would arise from the use of static electricity—insulating the patient and charging him with positive electricity; and "the almost invariable result was relief at the time, and for some time afterward." He is disposed to think, too, that "a succession of shocks from an induction-coil will have a very beneficial influence in . . . some forms of neuralgia and nerve-pain, provided only the operation be carried on long enough to bring about vascular reaction—long enough to bring on an artificial hot stage by paralyzing to a certain extent the vaso motor nerves" (p. 266). If inflammation is antagonistic to the state of irritation which produces nerve-pain, it is easy to understand how counter-irritants may be of use. Sedatives in stupefying doses, it is held, do not act beneficially in the relief of pain of neuralgic character.

We are surprised to find no mention made of the employment of subcutaneous injections of narceine and atropine in the treatment of nerve-pain, having ourselves so constantly got the best instant results from their use. Arsenic, too, is equally slighted; yet our experience with it in the chronic neuroses has led us to set a high value upon it as a neurotrophic, when given in long continued, small, and diminishing doses.

We shall detain our readers but a moment in noticing "certain questions relating to the pathology of paralysis." Passing over the propositions that there is no evidence to show that the paralyzing lesions in paralysis, when accompanied or unaccompanied by morbid muscular contractions, or by morbid sensations, or by an increased disposition to reflex movement, are of a congestive or inflammatory character—and if so, the pathological and therapeutical significance of the facts—we must note the author's remarks on "late rigidity" in paralysis—which is that permanent condition into which paralyzed muscles eventually pass; and is to be distinguished from "early rigidity," referable to a state of irritation somewhere in the nervous system, which is occasional, and ends in relaxation. Both forms were noticed by the late Dr. Todd. In all prolonged cases of uncured paralysis we have "late rigidity" as a persistent terminal symptom, coming on very gradually, after much wasting of the muscles, and when they have ceased to respond to galvanism. Dr. Todd believed that this form of contraction was due to the shrinking by cicatrization of the brain substance, which, acting on the neighboring healthy tissue, kept up a slow irritation, and, propagated to the muscles, excited in them corresponding gradual contraction, their nutrition at the same time becoming seriously impaired by the want of proper exercise, and by the general depressing influence of the lesion. Dr. Radcliffe's explanation, in accordance with his view of muscular action, is much simpler and more satisfying—namely, "that the muscles have lost their innate electricity and vitality when the rigidity comes on, and that they contract and remain contracted in consequence of this loss" (p. 271). In other words, "late rigidity" is nothing less nor more than the anticipation of rigor mortis—*rigor mortis in vitâ.*

According to the premises, the signs which are indicative of a congestive or inflammatory character in paralysis must be read in a contrary sense. We have here a new field in the therapeutics of paralysis soon to be opened up. It follows that the class of cases in which strychnia can be given with advantage may be enlarged—a view sustained by experience. Dr. Radcliffe thinks—he gives us but very little evidence in the way of cases to support his hopes and his doctrine—very satisfactory results from employing electricity, in one of three ways, may be anticipated in the treatment of paralysis—

"By charging the body with statical positive electricity, by drawing sparks in the course of the disabled nerves, or by using shocks of the coil machine until the operation is followed by a sufficient degree of vascular reaction. In chronic cases, I think it may be possible, by the latter means, to improve the nutrition in the faulty nerve centre by producing a state of vascular reaction there, for it may be supposed that the shocks of the machine will affect the nerve acted upon throughout its course, and that for this reason the vaso-motor nerves of the vessels of the nerve centre will not be out of reach of this action" (p. 274).

We would counsel great caution in the exercise of this procedure, when attempted.

Finally, the using of various movements and manipulations of the affected limbs is recommended, and the opinion expressed, that to omit them "in these cases is to deprive the patient of a most important aid to recovery."

The physiologist, pathologist, and practical physician will each find much that is interesting and instructive in this work; and we recommend its careful study to them. It is eminently suggestive, and is written carefully, honestly, and in the best scientific spirit. Dr. Radcliffe states all his propositions and deductions with great clearness as well as conciseness. He leads his reader on step by step, and if there are any flaws or gaps in the evidence or reasoning on which he dogmatizes, there is no attempt to gloss or bridge them over. If we are not quite prepared to be at one with him in all his views of innervation and muscular action, it is rather from their being yet "not proven," than from any positive attachment to the theories he essays to overturn. On many points the author's physiological views are not novel, and this he very candidly acknowledges, though he tells us he worked independently and in ignorance of the labors of others in the same direction. Of those who have held the same hypothesis of nervous contraction, Dr. West, of Alford, must be first named; in 1832 he maintained that muscular contraction can only take place when by an act of the will nervous influence is suspended. About the same time, Sir Charles Bell seems to have suggested, in a lecture at the Royal College of Surgeons, that *relaxation* and not contraction might be the act. Subsequently, Dugès, of Montpelier, Prof. Matteucci, Engel, of Vienna, and Stannius, of Rostock, arrived at similar conclusions—the grounds for their opinion being the coexistence of spasmodic action with nervous debility; the efficacy of stimulants as anti-spasmodics; the fact that the muscles of frogs are more prone to contract when cut off from the influence of the nervous centres; and the supervention of the permanent contraction of rigor mortis, when all signs of nervous irritation are extinguished.

The book is nicely printed, on good paper, but we regret to see it disfigured by the barbaric spelling of Webster.

The Physiology of Man: designed to represent the existing state of Physiological Science, as applied to the Functions of the Human Body. By Austin Flint, Jr, M.D., Professor of Physiology and Microscopy in the Bellevue Hospital Medical College, etc. Introduction: The Blood; Circulation; Respiration. New York: Appleton & Co. 1866.

The present volume, although complete in itself, is the first of a series in which the author intends to discuss all of the subjects usually presented in systematic treatises upon physiology. It is therefore a far more ambitious effort in this direction than any former issue of the press on this side of the Atlantic. Even in England no work of like pretensions has appeared since the great Cyclopædia of Anatomy and Physiology, which, however, was the result of the labors of many, and is now out of date. Numerous systems of physiology have appeared in France and England. Of those of English birth we have but two of importance, the work of Prof. Carpenter and that of Todd and Bowman. The former is an admirable compilation, and is best just where we should expect it to be, in the psychological chapters, and in the discussion of general questions. Elsewhere, it is only a closet book, the clever digest of other men's labors, without that authoritative criticism which can come only from one who has become familiar in the laboratory, through direct experiment, with the processes by which modern science is daily groping her way toward larger and broader truths.

Like comment in another direction applies justly to the second book named above. Todd and Bowman, especially the latter, were good anatomists and micrographers, and hence we find the microscopic anatomy of the tissues wonderfully well described and delineated, so that from this side they have cast new light on many obscure points in biology. Beyond this, in the regions of physiological chemistry and corporeal physics, their work is not to be compared to those of several continental laborers. In point of fact, it is not to be expected that a country which produces at present no working physiologists—if we except a most able man, Dr. Richardson—should originate first class books on this subject.

This criticism does not apply to the French treatises as a class. The works of Beraud and Longet were written by men to whom the manipulations of the biologist's laboratory were of daily familiarity. Milne Edwards' cyclopædic work, on the other hand, is more devoted to general than to human physiology, and betrays the naturalist rather than the working biologist. While expressing this opinion, that the best treatise on this, as on any subject, will usually proceed from a person who has made discoveries in the branch of knowledge referred to, and who has practically embraced the results of others by repeating and varying these modes of research—while holding, we say, to this view, we by no means assert that to be a working physiologist gives a man all the abilities required to produce a first class summary of the present state of information upon his science. There are now living, savans who are well known for researches and discoveries, but who want the special qualities required to produce a text-book.

None of the qualifications above indicated are wanting to the author of the volume before us. He has taught and lectured for several years, and has learned, therefore, the art of clearly stating facts. He has made several investigations of original character, and one in especial, of remarkable merit—so excellent, indeed, as to make us regret that he has resolved to use for this book so many years which might have been applied to original inquiry in paths which, in this country, so very few have trodden. To the book itself we must look as the test of his power to collate and compare facts, judicially decide as to mooted questions, and to state with precision and clearness the conclusions he has reached. It is not out of place to add that his facts are not alone clearly, but also pleasantly stated, as to which quality, by the way, there is a vast difference among physiological treatises. Carpenter's book is delightful reading, and at the other end of the scale Brown-Séquard's various monographs are perhaps the dryest and most difficult reading a doctor is likely to encounter. Among the American text-books for students, Dr. Dalton's is the most agreeable, and we may instance his chapter on generation as the most pleasantly written essay on the subject with which we are acquainted. To conclude these brief allusions to our native books without some mention of Prof. Dunglison, would be unfair to this most extensive of medical writers. His physiology has the defect which always must exist in any book which is written by a person unaccustomed to pursue experimental inquiries. It is what a practice of medicine would be if penned by a person who had not a clinical experience; otherwise it is, or was—for there is no late edition—a book remarkable for a pleasant and clear style and for great erudition. Its bibliographical stores are indeed so great that it has, and will always have, value as a work for reference.

With a brief notice of vital properties and a judicious neglect of that curious load of definitions which encumbers most physiologists, Dr. Flint goes on, in his Introduction, to consider the various elements, simple and compound, drawing largely upon the great work of Robin and Verdeil. Chapter i. to Chapter ix., inclusive, treats of the blood and the circulation. We have looked it through with care, and are satisfied that it is the most complete statement in that direction to be met with in any physiology. The latest experiments of Marey and Bernard and others are recorded, and full credit is given to American observers, and to some of the older classical authorities, whose works are too much lost sight of in many modern works. The chapter on Peculiarities of Circulation and that on Asphyxia are among the best. We have noted a few omissions, and some parts which would have been better for fuller details, but, on the whole, this section leaves little to be desired.

The third portion of the volume is devoted to the consideration of Respiration. It compares favorably with like portions of other works, but did not strike us as being so complete as the preceding chapters.

In all of the sections the author alludes frequently to his having verified certain statements of former writers by repetition and modifications of their experiments. It is this form of criticism which gives greatest value to a book on an experimental science, and, as we have said before, places it on a much higher level than any compilation can possess without it.

The wood-cuts in Dr. Flint's book are few in number, but, so far as we know, the student gets very little aid from such small anatomical cuts as profusely adorn many of our treatises, while for the physician they are literally of no use. Diagrams and drawings of apparatus are more useful, and we should like to have seen even more of these than are given in Dr. Flint's volume. The paper and binding are excellent, and are very superior to those of the wretched American reprints of Prof. Carpenter's handsome English books, or the like reproductions of some of Churchill's neat and handy treatises.

We regret that we have not space enough to allow of a longer criticism upon Dr. Flint's work. We have said sufficient, however, to show that we think it well entitled to a place in the libraries of such doctors as like thorough books, clearly written and neatly printed.

QUARTERLY REPORT OF SURGERY.

1. *Contused Wounds of Bone and Osteomyelitis.* By Henry Gibbons, Jr., M.D. (Pacific Medical and Surgical Journal, Feb., 1866.)

In the severest of these injuries, in the shafts of long bones for instance, not only is the periosteum, nourishing the external table, destroyed, but the endosteum is separated from its attachment, or otherwise injured, and the entire thickness of bone is deprived of the means of nutrition. The medulla also receives a severe concussion, causing extensive inflammation and subsequent gangrene, which may extend several inches above and below. In the fatal cases, then, the morbid process is as follows: Contusion of the bone, with destruction of the periosteum, injury to the endosteum, and concussion of the medulla; osteomyelitis terminating in gangrene, and complete disintegration of the medulla; absorption of this product and its conveyance into the general circulation, giving rise to abscesses in the lungs, liver, spleen, kidneys, etc., in other words, pyæmia and death. And here let me remark, that in the sixty-eight cases of pyæmia that came under my observation, during two years' service in the Douglas Hospital, all except two were known to have had some injury of bone, and in these two a thorough examination was prevented. In one of these, at least, I strongly suspected a contusion. I do not mean to say that blood poisoning does not occur when the bone is uninjured, but simply that in sixty-eight cases I have not seen one such. Osteomyelitis occurred to a greater or lesser extent in a large majority, if not all, of our amputations; and in the fatal cases (from pyæmia) the same train of symptoms and post mortem appearances, both of the viscera and bone, as those noted in the following cases, were presented.

I. Private G. C. Wounded April 2d, in the final attack at Petersburg; admitted to hospital on 6th. The ball entered the internal aspect of middle third of right thigh, lodging very near to the femoral vessels. On preliminary examination no ball could be felt, and as the patient was not sure that it had not been removed, it was deemed advisable to disturb the wound as little as possible, for fear of hemorrhage. General health and spirits excellent; sleep, appetite, and excretive functions undisturbed, and pain not severe or constant. April 12th. I ascertained the presence and position of the bullet by means of a Nelaton probe, and succeeded in extracting it without difficulty. It was a Minie ball, flattened to the size of a half dollar. No untoward symptoms as yet. About the 18th, pain began to be felt in the thigh, and two days thereafter severe chills and profuse perspiration occurred. Thenceforth the other symptoms of pyæmia, such as frequent pulse and respiration, cough, pain in the chest, sweet breath, loss of appetite, vomiting, diarrhœa, yellowness of skin and conjunctivæ, loss of sleep, pain, sanious, fetid and bloody discharge from the wound, and delirium followed in quick succession. Death occurred on the 30th instant, just four weeks from the reception of the injury. Pleural cavities filled with a large quantity of dirty, yellow, fetid fluid, containing large flakes of yellow lymph; lungs studded with pyæmic abscesses of various sizes and stages. The pneumonia caused by these numerous patches involved the larger portion of the lung structure. That portion of the bone which had been deprived of its periosteum was dead and undergoing the process of exfoliation—a shallow irregular groove separating it from the sound tissue. On sawing open the femur longitudinally, the medulla for several inches above and below the point of injury was found disintegrated—part changed to a dirty yellowish matter—part greenish and semi-solid—the whole so intolerably fetid as to excel any stench I ever met with. There was, in fact, gangrene of the medulla.

II. Private W. B. Wounded April 2d, in the final attack on Petersburg. Admitted to hospital on 6th. General health good. April 7th. Removed a moderately flattened Minie ball from a wound in the thigh, very similar to that in Case i., except that it was upon the anterior surface. The bone was not severely injured nor extensively denuded, but the roughened surface could readily be felt with the finger. The health remained fair for two or three weeks, when chilly sensations began to be felt, and there was some insomnia and anorexia. I awaited anxiously the threatened inception of pyæmia. The wound, however, preserved its healthy appearance and discharge, though considerable pain was somtimes experienced. These untoward symptoms lasted with gradually increasing intervals for upward of two weeks, and then passed off altogether. The wound was kept open to permit free discharge and to facilitate the exit of bone, should there be any exfoliation. The periosteum finally covered the bone, there was no exfoliation, and the patient was well.

III. Private J. B. F. Wounded April 2d, in the final attack on Petersburg. Admitted April 6th, with wounds of penis, scrotum and thigh, the ball passing internally, striking the ramus of the ischium and escaping posteriorly. The patient was in great pain from the first; his other symptoms were so similar to those recorded in Case i. as to render it unnecessary to repeat them. The difference was that the disease ran its course more rapidly, death occurring on the 21st inst. Appearances in the chest similar to those already mentioned. Injured bone partially exfoliated; its internal structure was not examined.

IV. Private J. K. Wounded April 2d, before Petersburg. Admitted April 6th, in good general health. The ball had entered the left thigh externally, about eight inches above the knee joint, and passed upward. Patient said he had been anæsthetized on the field and examined, but was not certain that the ball had been removed. I examined the wound carefully with a long probe, but could feel no ball or bone, though the bottom of the wound seemed to be reached. The health continued fair and no complaints as to pain were made, till toward the last of the month, when the discharge became unhealthy and burrowed in the upper part of the thigh. I made an incision below and anterior to the trochanter, and by the use of large wet cloths, covered with oil-silk, the discharge immediately improved in character; sinuses ceased to be formed, and those already formed closed up, leaving the main opening. Notwithstanding this improvement at the seat of injury, the health became affected, slight chill occurring, followed by severe ones and the usual train of pyæmic symptoms. Then it was that I suspected contusion of the bone, though none had been discovered. Death took place upon the 17th May following. Large effusion in the chest; no well marked abscesses in the lungs or other viscera. On examination of the thigh no collections of matter were found, and no sinuses—only the track of the ball, which was tortuous. The missile had struck the femur some six inches from the wound of entrance, and glancing upward and outward lodged just above and anterior to the hip joint, over a foot from the point of entrance, where it was found flattened. No trouble could be traced to irritation from the ball, the tissues around it being quite healthy. The injury to the bone had caused partial exfoliation of a sequestrum two inches long and half an inch wide in its widest part. The medulla presented the same appearance of gangrene as noted in Case i.

V. Sergeant W. Admitted April 6th, with a wound of the foot, received before Petersburg on the 2d. The ball struck the dorsum of the foot horizontally, making a grooved wound in the flesh, and denuding the third metatarsal bone of periosteum for three-fourths of an inch. No untoward symptoms showed themselves, except at times severe pain; no exfoliation took place; the bone soon became covered with periosteum and the wound healed readily.

VI. Private J. R. Wounded April 1st before Petersburg. Admitted on the evening of the 5th. This was almost the counterpart to Case i., except that the injury was to the middle third of left femur, and the ball (much flattened) was extracted the morning after admission. Both cases had the same train of symptoms; both died just four weeks after the injury, and both presented the same appearances at the autopsy.

VII. Private J. C. Wounded and admitted at the same time with Case ii. Ball removed April 10th, not much flattened. All the important points were similar to those of Case ii., the patient recovering.

VIII. Private C. D. April 1st, received a slight contusion of the fibula, upper third, the periosteum being removed. April 5th, admitted to hospital. No unpleasant symptoms showed themselves. The wound was assiduously kept open to permit free discharge, and prevent burrowing of matter, so apt to take place. It healed readily.

In reviewing the foregoing cases, it will be seen that mere striking of the bone by the missile or denuding it of periosteum, was not sufficient to occasion serious results. There required to be a decided shock, or concussion, to excite the destructive changes within the bony canal. In Cases i., iv. and vi. this latter condition was proved to exist by the excessive flattening of the bullet; whereas, in Cases v. and vii. the ball was not much flattened, or it had struck the bone at an exceedingly acute angle.

2. *Luxation of the Foot Forward.* By Dr. Willemin. (L'Union Médicale, Jan. 11, 1866.)

Malgaigne calls this the most rare of all dislocations; neither he, nor Boyer, nor Astley Cooper had ever met with it. A. Berard (Dict. de Méd., t. xxiv., p. 457) says, "all writers speak of it as possible, but none, so far, have ever reported a case." Nelaton saw one in a young woman who had thrown herself from the window of a fourth story. Delamotte (Traité de Chirurgie, 1771) summarily mentions one which came under his notice. Three cases are cited by A. Colles, of Dublin. (Todd's Cyclop. of Anat. and Phys.) R. W. Smith, of Dublin, records one example he had seen. (Dub. Quar. Jour., May, 1852.) Pirrie, of Edinburgh, gives one case. Huguier communicated a case to the Medical Society of Paris (Gaz. des Hopitaux, 1855), and one, observed by Demarquay in 1861, is related in this paper. Demarquay's case, a female, was the result of a misstep. In Mr. Smith's, the subject of the accident was a sailor, who, while assisting to raise a heavy cask, having at the same time one leg much flexed on the foot, and the thigh on the leg, was struck by the falling of the cask just above the knee, forcing the distal end of the tibia backward from off the astragalus on to the upper and posterior surface of the calcis. M. Demarquay states that in his case the man was descending a ladder, and on reaching the last rung jumped to the ground. The heel of the left foot struck the edge of a joist, by which the whole body was thrown backward, and the man would have fallen upon his back had he not held on to a piece of wood, which at the same time served as a sort of *arc-boutant.* The left heel was held on the border of the joist by the nails, while the leg was thrown backward. In Mr. Huguier's case, the foot was caught in a horizontal wheel of the break of a railway wagon, and was not able to follow the movement given to the leg by one of the spokes of the wheel. In Demarquay's, Huguier's, and Pirrie's cases there was no fracture of any of the bones of the joint. In Smith's, Colles's, and Nelaton's cases there was fracture of the tibia—either of one of the malleoli, or of the anterior border.

The subject of the case narrated by Mr. Willemin was a female, thirty-eight years of age. Her left foot slipped on the waxed floor, and falling backward on the left side, the heel of her right foot, which had been jerked up by the fall, struck the floor violently, causing severe pain. There was a disposition to weakness of the joints, her feet turning sometimes in walking; and she had had a luxation of the ulna backward, by a fall on the palm of the hand. All the signs of luxation of the foot forward were present after the accident —prominence of the articular surface of the astragalus; shortening of the heel, which approximated nearer the malleoli; lengthening of the dorsum of the foot, and inability to move the foot. Reduction was effected, immediately after the accident, by firmly seizing the foot and extending it, while the other hand held the leg near the ankle joint; the foot was then forcibly flexed, and pushed backward (j'essayai de le ramener d'avant en arrière). The bone returned with a sharp snap, as in luxation of the humerus. In M. Huguier's case the reduction was easy. M. Demarquay was successful after several attempts. In the other published cases reduction was not effected, and the patients remained lame with anchylosed joints. Mr. Holthouse remarks (Holmes' System of Surgery, Vol. ii., p. 658): "There seems to be no reason why cases of this description, if seen early and properly recognized, should not be reduced in a similar manner to the lateral dislocations, and treated in all respects similarly." Success depends on speedy reduction, which can be accomplished by traction in the direction of the displacement, to disengage the astragalus, and then sudden flexion, at the same time forcing the heel backward, the leg and thigh being flexed, to diminish the resistance of the muscles. Remedies must be used to prevent or subdue inflammation, and the joint placed in an immovable apparatus. In the five cases given by Malgaigne, three were in women and two in men; Smith's, Pirrie's, Huguier's and Demarquay's were all in men.

3. *Excision of Knee Joint.* (Savannah Journal of Medicine, Jan., 1866.)

Dr. J. B. Read reports a successful case of this operation after gunshot wound. The subject was wounded by a Minie ball, November 27th, 1863.

He presented a small circular wound on the outer aspect of right thigh, one and a half inches above the external condyle, on a plane somewhat posterior to it, and a clean incision, one and a half inches long, touching at a tangent the outer and upper edge of the patella, where the ball was cut out. There appears to have been no hemorrhage, but utter inability to walk. Excision being decided on, an elliptical incision was made, with its concavity upward, around the patella, eight inches long, extending from over one condyle to the other, dividing the ligamentum patellæ. The joint was laid open; one and a half inches of the os femoris and half an inch of the tibia removed; the patella was uninjured, but was ablated also. No vessel required ligating. The operation developed the following condition of things: there was a groove (as if it had been bored) extending from the external condyloid ridge of the femur to the superior edge of the cartilage covering the articular surface, and opening the synovial sac. The patella was untouched. The fluids in the sac escaped in large quantities, being reddish, thin, and containing clots of blood or shreds of fibrine, but no pus. The membrane itself was a little congested, but not discolored, and the parts adjacent and external to the joint extensively engorged with inflammatory exudation. This exudation had developed into good reparative material at the wound of exit; elsewhere it seemed to be degenerating into pus. Silver sutures (two in number) were used to wire the bones, of which the adaptation was perfect; the entire wound was closed in like manner. A box, similar to the one used by Mr. Butcher, of London, was prepared to receive the limb, and a half-grain of sulphate of morphia was administered. His condition on April 1st, 1864, was slight lateral motion between the bones and very little antero-posteriorly; the leg is well supported by the reparative material, without assistance of splint or bandage, affording the deduction that well organized fibrous tissue, of a ligamentous character, is at present the bond of union. The natural size of the limb is regained, but a small opening still remains externally to the median line, from which issues, in minute quantities, a thin, serous fluid, mingling with traces of pus gathered at the surface. Measurement gives two and a quarter inches shortening for the affected limb. The foot has the natural eversion, and the limb, from trochanter to malleolus, is straight. A hardness and symmetrical roundness simulates the patella anteriorly.

On the 20th November, 1865, he writes: "The starch bandage was removed after wearing it four months, and under its influence my leg became well. Bony union had taken place, and I have gradually recovered the use of my leg. In a few weeks I laid down one crutch and used a stick, using my leg constantly in walking. Finally I laid aside both crutches, and have since used nothing but a stick. I walk perfectly free, suffer no pain or feel no weakness in the knee. Two or three accidents have severely tested the strength of my leg, and I no longer feel any apprehension about its ever breaking. The carriage of my body in walking cannot be detected as differing from that of any one; and one only discovers I am lame by looking down at my leg. I stand at my desk all day writing, and feel little fatigue. I find difficulty in getting a comfortable shoe. I think one raised at both the heel and toe will be the easiest."

Mr. Patrick Heron Watson, of Edinburgh, in a letter to the same journal, says: I have cut out eight knee joints, in the course of the last twelve months, with most satisfactory success. Only two cases have died; the rest are perfect results, except one, which is in progress. Two months is the longest time to which the after-treatment has extended. I excise by a semilunar incision, retaining the patella in the long flap. I reserve no more bone than is inevitable. I employ acupressure and wire sutures. The patient is then carried to bed, and the whole affair slung from a swinging cradle, by a hook which projects from the iron rod. I have found this mechanism not only convenient in the extreme, but so comfortable to the patient that he or she can sit up in bed within a week after the operation. Contrasted with any of the other methods adopted previously to this, it is infinitely superior.

To prevent oozing going on into the cavity of the excision I apply a common bandage immediately after the patient is placed in bed, so as to effect such support as will control all oozing, which would otherwise distend the flap and cause copious suppuration. This bandage is removed in the course of forty-eight hours, and the acupressure needles removed at the same time. All the dressing I ever use is either wet lint or nothing at all, leaving the serosity in some cases to crust, and in such circumstances I have seen no suppuration—in one case union having taken place by what might be called primary union.

At a meeting of the Medico-Chirurgical Society of Edinburgh, December 6th, 1865 (Ed. Med. Jour., Jan., 1866), Dr. Watson exhibited photographs showing the appearance of the limbs in four adult cases after excision of the knee joint. He said, in all, the limbs were firmly anchylosed, there was but little shortening, and the patients walked with comfort and facility. They had all been treated after the operation by the same apparatus. It consists of a single iron rod, of the thickness of a No. 10 bougie, extending from the fold of the groin to the end of the toes, applied along the front of the limb, and in close contact with the surface throughout its whole length, except at the knee, where it formed an arch. Behind the limb a Gooch's splint is applied, extending from the fold of the nates to beyond the heel. For four or five inches above its lower extremity the central portion of the splint is cut out, so as to avoid pressure upon the calcaneum or tendo Achillis. The splint is also diminished in lateral width for about six inches at the situation of the operation, so as to leave the extremities of the semilunar incision uncovered. The iron rod and the Gooch's splint are retained in contact with the limb by means of an open-wove bandage, which was soaked with a cream of plaster of Paris after it had been applied. Only the incision is left uncovered, so as to provide free exit for the escape of matter. The apparatus thus applied never requires to be touched from its first arrangement till consolidation was complete, and all retentive measures could be dispensed with. In no case were the patients kept more than five weeks in bed, while from the very first day they could sit up in bed and move the limb about; for, as it was slung, and the rod, splint, and plaster bandage adhered closely to the limb, there was no risk of any movement of the pelvis rotating the thigh and thus producing displacement, a result unavoidable by the use of any other apparatus hitherto recommended. It is impossible for any patient to lie continually upon the back for four or five weeks without at least easing the hips from side to side. If measures are employed to secure a constant occupancy of the same posture, bed-sores must result; if it is not secured, rotation of the thigh ensues, and the leg would thus be found ultimately to occupy a position of inversion as respects the axis of the femur, while more or less angulation in an outward direction would occur at the junction of the femur and tibia. It was his early experience of the difficulties met with in securing a completely satisfactory result by means of the various methods hitherto recommended, that had led to Dr. W.'s devising this plan of after-treatment.

In the *London Medical Times and Gazette*, March 3d, 1866, there are some very excellent remarks, by Mr. Henry Smith, on the particular instances in which excision of the knee joint should be substituted for amputation, and three illustrative cases are given. In all the single transverse lunated incision was made. The *first*, a tolerably healthy looking woman, æt. 30, with pulpy degeneration of synovial membrane of the joint, cartilages here and there slightly ulcerated, bony tissue of femur healthy, and that of tibia somewhat softened; disease of one year's duration; pyæmic symptoms set in on the sixth day, and she died on the eighteenth day after the operation. The *second* was a healthy boy at eight, with strumous disease of left knee joint, of about seven years' duration. The leg was much wasted and useless; all active disease had ceased. The object of the operation was to rectify deformity. The operation was done on the 7th of October, 1865; the lower end of the femur, and part of the head of the tibia, with the patella, were removed. No bad symptom. On the 29th of November following he was discharged cured. The *third* case was in a marine, æt. 30, with disease of knee joint of five years' standing. The joint was anchylosed, semi-flexed, and the tibia slightly dislocated backwards. A large, wedge-shaped piece of bone was removed, including the whole of the anchylosed parts (the lower end of the femur, patella, and heads of the tibia and fibula, were found wedged together); the limb was put up in an ordinary excision splint and swung. Not a single bad symptom followed. The operation was done January 6th, 1866, and February 9th the man was going about on crutches, with little shortening, firm union, and in perfect health.

Another case by Mr. Wood is summarized in the same journal. The patient was a lad five years of age. The disease had begun in the synovial membrane, the joint being secondarily affected. The epiphysis of the tibia was removed, and also a thin slice of the femur. The case healed well, and there was but little shortening.

4. *Compound Fracture of the Thigh Treated without Amputation in the Southern Army.* (Richmond Medical Journal, Feb., 1866.)

	Recoveries. 116	Deaths 105	Days.	Inches.
Average period of recovery	....	....	104	....
Greatest period of recovery	....	....	255	....
Least period of recovery	....	....	41	....
Average period of death	....	....	52	....
Greatest period of death	....	....	185	....
Least period of death	....	....	1	....
Average amount of shortening	....	....	....	1·9
Greatest amount of shortening	....	....	....	5·0
Least amount of shortening	....	....	....	0·5

5. *Gunshot Wounds in the Southern Army.* (Richmond Medical Journal, February, 1866.)

The number of injuries from gunshot wounds in the Southern armies during the years 1861 and 1862, were: Field, 29,569 cases, 1,623 deaths, and 493 discharges. Hospitals, 47,724 cases, 2,618 deaths, and 742 discharges. Killed in battle, 8,087.

6. *Deep-seated Abscess of the Forearm, consequent on a Punctured Wound of the Thumb.* By Prof. NELATON. (Journal of Practical Medicine and Surgery, Jan., 1866.)

Mr. Nelaton performed an operation which is sometimes surrounded with difficulties. The patient, a cook, in preparing a leg of venison, injured the thumb of her left hand with the sharp point of a bone. Inflammation followed, which promptly extended to the sheath of the tendon of the flexor pollicis, and thence reached the forearm, where it occasioned enormous tumefaction. The entire limb, to the shoulder, presented a spheroidal shape and hardness, which the Professor pointed out as characteristic of deep-seated suppuration. The size and induration of the parts, said Mr. Nelaton, are pathognomonic of suppuration consequent on inflammation of the fingers; but the hardness is more especially deserving of attention because the mere increase of volume may possibly result from irritation of the lymphatics only, and indicate superficial inflammation, which does not imperatively call for surgical interposition, whereas the induration distinctly points to deep-seated inflammation of the entire limb. In order to detect the presence of suppuration, both hands must be laid on the anterior aspect of the forearm, in a direction parallel to its axis, and by alternate pressure with the fingers of each, the sensation of the displacement of a fluid and of fluctuation will be distinctly felt. In this case the pus originated around the tendon of the flexor pollicis, the sheath of which participated in the disease, and the secretion, breaking down all obstruction to its progress, at first occupied the parts adjacent to the muscle, and had finally accumulated in front of the interosseous ligament and cf the pronator quadratus. In this form of disease prompt means must be resorted to, and a liberal incision be made to give issue to the pus. The operation requires to be performed with considerable caution. On one occasion, in spite of his well known dexterity, Blandin divided the median nerve, and other surgeons have injured the tendons. In order to avert these undesirable contingencies, the skin must be laid open by a long incision, and the surgeon must then proceed with as much caution as if the ligature of an artery was in contemplation. These proceedings are not brilliant, but are necessary for the patient's safety. In the first place, the median nerve, after passing between the two heads of the pronator radii teres, and beneath the flexor sublimis digitorum, runs down the middle of the forearm between the latter muscle and the flexor profundus, in the cellular layer which separates this muscle from the flexor longus pollicis. Above the wrist the nerve lies by the outer border of the tendons of the flexor sublimis, along the inner edge of the palmarus longus. The median nerve being thus situated on the mesial line, the incision should be made laterally, and in preference near the external margin of the forearm. This precept will be readily borne in mind if it be recollected that the nerve runs from the inner side of the arm, and that the incision must be performed between it and the external part of the forearm. In the present instance, Mr. Nelaton divided the skin in an extent of four inches, and incised successively the subcutaneous cellular layer and the aponeurosis, thus exposing the palmarus longus and flexor carpi radialis, the tendon of which is the surgeon's best guide. This tendon, once exposed, must no more be lost sight of; along its inner edge the fibres of the flexor sublimis must be parted, when the median nerve will be discovered, and should be pushed inward. The knife may then be boldly inserted through the flexor profundus into the abscess, which lies, as we have stated, between this muscle on the one hand, and the pronator quadratus and interosseous ligament on the other. A considerable amount of pus escaped after incision; but the hand also required attention, a large whitlow occupying the thumb, and gangrene being imminent in the whole extremity. Mr. Nelaton divided the tendinous sheath of the thumb, and incised liberally the subcutaneous cellular layer, which was the seat of diffused inflammation. The Professor remarked that under similar circumstances this layer is capable of acquiring a thickness of fifteen or eighteen lines, and therefore no apprehension need be entertained of injuring the aponeurosis. Mr. Nelaton then alluded to the chances of restoration of the movements of the hand and fingers. Although a tendinous sheath had been freely laid open, and in spite of the presence of a puriform secretion in every part of the forearm, he thought that the movements would eventually be fully restored. For two or three months a certain degree of stiffness in the action of the limb must be expected, but the morbid adhesions will eventually yield, a new serous membrane will be developed, and the mobility of the fingers will return to its natural standard.

7. *Remarkable Recovery from Gunshot Wound of Skull.* By J. A. Elston, M.D., Mo. (St. Louis Med. and Surg. Journal, Jan. and Feb., 1866.)

S. C., aged fifty years, received a gunshot wound on the 18th of September, 1856. Wishing to ascertain whether his rifle was loaded, he placed his foot upon the hammer and his mouth over the muzzle of the gun, to blow into it, when his foot slipped from the hammer and the gun was discharged, the ball, of large size, striking and carrying away two of the incisor teeth, also a portion of the superior maxillary, the vomer, and all the nasal bones, making four incised wounds through the soft parts of the nose between the eyes; striking the os frontis centrally, and fracturing that bone into a number of pieces, separating it from the parietal bones at the coronal suture entirely. Saw him an hour after the accident; found him partially sane, and bleeding profusely. I passed probe up from wound at the root of the nose, and found large piece of loose bone; extracted it with the forceps, and found it to be a portion of the superior maxillary, $1\frac{1}{2}$ inches long by $\frac{3}{4}$ of an inch wide. Smaller portions were removed, but I failed to discover the ball, although I passed the probe as far up as the coronal suture. I placed the fractured pieces of the os frontis as nearly as I could in their normal positions, and applied the bandage; directed cold applications applied continually to the head, and a cathartic. Saw him next morning; found the face and eyelids much swollen and red, but there was no injection of the conjunctiva, and he answered my questions intelligently. Pulse about normal; bowels had moved in the night. Continued the cold applications to the head. No severe bleeding occurred, and there was no inflammation of the brain; but about the twentieth day from the accident the patient began to show signs of pressure on the brain. He became very stupid, and his bowels much constipated. Found the bones of the os frontis more loose and crepitating, and considerable accumulation of pus. I made an incision about the frontal eminence, and there was discharged about two ounces of pus, but with little relief to the patient. It now became evident that my patient would die if the pressure was not removed. I concluded at once to remove the dead pieces of the os frontis; made an incision about an inch above the root of the nose, and carried it back nearly to the coronal suture. Considerable amount of pus was discharged, and we removed about one-fourth of the entire bone. Found and extracted the ball $\frac{3}{4}$ of an inch long by $\frac{1}{2}$ inch in diameter, pressing against the pia mater and upper edge of the crista galli, having passed entirely through the os frontis, breaking up the frontal and longitudinal sinuses. The edges of the wound were brought nearly together with adhesive strip; instructions were given to remove the bandage from time to time, that the pus might escape. From this time on he grew rapidly better, and I closed the wound with sutures on the seventh day after the operation, and about the sixtieth day from the accident he was able to ride on horseback to Waynesville, Mo., near which place he now resides, and is able to follow his trade (gunsmith).

8. *Excision of nearly the whole of the Ulna. Reproduction of the Bone.* By J. K. Weist, M.D. (Cincinnati Lancet and Observer, March, 1866.)

Col. C. received, October 27th, 1864, a gunshot wound in the left arm. The ball entering on the inside of the arm about two inches above the wrist joint and passing upwards, made its exit on the outside of the arm about three inches below the point of the olecranon, badly breaking up the ulna in its passage, leaving, however, both of the articulations intact. Two days after the receipt of the injury it was deemed advisable to remove the broken fragments of the ulna by an operation. This was done by making an incision down to the bone, and extending from the wound of entrance to that of exit. Many fragments of bone were removed, which together made up almost the entire bone. There only being left behind about two and a half inches of the upper and one inch of the lower end, the broken ends of these portions of the bone left behind were smoothly sawn off. Although the periosteum in this case was much lacerated and torn, it was carefully separated from each fragment removed, and its connections as little disturbed as possible. After the operation the arm was placed upon a splint, and the wound treated in the usual manner. And although this officer was unavoidably placed under bad hygienic influence in general hospital, where considerable sloughing and secondary hemorrhage occurred, greatly protracting the cure, the final result was highly satisfactory, as the lost bone was reproduced, and when I had the pleasure of examining the arm last October, just one year after the operation, all of its functions had been regained, with the exception of a slight loss of power to rotate the arm. The new ulna, though not quite so symmetrical, seemed to have all of the solidity and value of the one in the uninjured arm.

AMERICAN MEDICAL ASSOCIATION.

The SEVENTEENTH ANNUAL SESSION will be held in the City of Baltimore, on Tuesday, May 1, 1866.

The following Committees are expected to report:

On Prize Essays, Dr. AUSTIN FLINT, Sr., New York, Chairman.
On Quarantine, Dr. WILSON JEWELL, Pa., Chairman.
On so-called Spotted Fever, Dr. JAS. J. LEVICK, Pa., Chairman.
On Ligature of the Subclavian Artery, Dr. WILLARD PARKER, N. Y., Chairman.
On Tracheotomy in Membranous Croup, Dr. ALEX'R N. DOUGHERTY, N. J., Chairman.
On Rank of Medical Corps in the Army, Dr. C. S. TRIPLER, U. S. A., Chairman.
On Rank of Medical Corps in the Navy, Dr. T. L. SMITH, N. Y., Chairman.
On Medical Literature, Dr. C. A. LEE, N. Y., Chairman.
On Medical Education, Dr. SAMUEL D. GROSS, Pa., Chairman.
On American Necrology, Dr. C. C. COX, Md., Chairman.
On Patent Rights and Medical Men, Dr. DAVID PRINCE, Ill., Chairman.
On Alcohol and its Relations to Man, Dr. GERARD E. MORGAN, Md., Chairman.
On Insanity, Dr. ALFRED HITCHCOCK, Mass., Chairman.
On Milk Sickness, Dr. ROBERT THOMPSON, Ohio, Chairman.
On the Relation which the Doctrine of the Correlation and Conservation of Forces bears to the Physiological and Pathological Condition of the Human System, Dr. S. L. LOOMIS, D. C., Chairman.
On the Progress of Medical Science, Dr. JEROME CANDEE SMITH, N. Y., Chairman.
On Diphtheria, Dr. H. D. HOLTON, Vt., Chairman.
On the Comparative Value of Life in City and Country, Dr. EDWARD JARVIS, Mass., Chairman.
On Drainage and Sewerage of Cities in their Influence on Health, Dr. WILSON JEWELL, Pa., Chairman.
What Effect has Civilization on the Duration of Human Life, Dr. AUGUSTUS A. GOULD, Mass., Chairman.
On Disinfectants, Dr. E. M. HUNT, N. J., Chairman.
On Compulsory Vaccination, Dr. A. NELSON BELL, N. Y., Chairman.
On Strangulated Hernia, Dr. W. F. PECK, Iowa, Chairman.
On the Causes and Pathology of Pyæmia, Dr. J. J. WOODWARD, U. S. A., Chairman.
On the Use of Plaster of Paris in Surgery, Dr. JAS. L. LITTLE, N. Y., Chairman.
On the Etiological and Pathological Relations of Epidemic Erysipelas, Spotted Fever, Diphtheria and Scarlatina, Dr. N. S. DAVIS, Ill., Chairman.
On Meteorology, Medical Topography and Epidemics,

Dr. J. C. WESTON, Me.	Dr. D. FRANCIS CONDIE, Pa.
" P. A. STACKPOLE, N. H.	" T. ANTISELL, D. C.
" C. L. ALLEN, Vt.	" O. S. MAHON, Md.
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NEW YORK
MEDICAL JOURNAL,

A MONTHLY RECORD OF MEDICINE AND THE COLLATERAL SCIENCES.

MAY, 1866.

ORIGINAL COMMUNICATIONS.

Tuberculosis. An Abstract from Virchow's Krankhaften Geschwülste. By FRANCIS DELAFIELD, M.D., New York.

One of the greatest of living pathologists has definitely formulated his views concerning that most difficult subject—tuberculosis. No English translation of his work has yet appeared. This short sketch of his treatise may be of interest.

The lymphatic glands consist of cells, the so-called lymph cells, contained in a fine reticulum of connective tissue, and arranged in follicles divided by fibrous sheaths. These follicles may form large masses, as in the thymus, the tonsils, and in Peyer's patches; or they exist singly, as in the solitary intestinal glands, and the malpighian bodies of the spleen. The essential element is, in all cases, the cells.

There are two groups of tumors analogous in structure to these lymphatic glands. First, hyperplastic growths of already existing glands; second, heteroplastic growths of the elements of glands, where none such normally exist. To the second of these groups belong tubercles. There are two words which have been so loosely used in connection with tubercles, namely, scrofula and struma, that it is necessary, at the outset, to define them.

Scrofula is the literal Latin translation of the Greek chœras, which is found in Hippocrates. Both expressions signify a young pig (scrofa, χοιρος). The older writers derive the name from the fact that the swellings are as numerous as a sow's young; or that swine suffer from this disease; or that swine have necks containing many glands; or that an affected neck assumes the shape of a swine's. The Latin word, however, was little used by the ancients, and the expression "scrofula" has only been generally used since the time of Cullen and Hufeland.

The word struma is found in translations of Greek authors, and in Celsus, as a parallel expression to scrofula, often with exactly the same meaning. This original use of the two words as synonyms has been reproduced by modern English writers, who express by "strumous" what continental writers call "scrofulous," or "tuberculous." French writers use the word struma very little. German authors, on the other hand, express by struma, tumors connected with the thyroid gland, and, by scrofula, tumors connected with the lymphatic glands. This use of the words will be here retained. Scrofula, however, is here used to express not a mere swelling of the lymphatic glands, but a peculiar condition of the constitution, which causes the lymphatic glands to be unusually vulnerable to any irritating cause, and indisposed to healthy reparative action. This condition can be explained in part by an unusually rich development of the lymphatic organization, in part by a weakness of particular parts or regions. This weakness is caused by a certain imperfection in the organization of the glands. Such a constitution may be hereditary, or may be produced by insufficient and bad nourishment, foul air, etc.

The word tubercle had originally nothing to do with any special process, but merely expressed the shape of some particular local growth, or was even used as a synonym for processes of the bones. So it was applied to tumors of the most diverse natures, syphilitic, cancerous, bony and fibrous, as a simple descriptive term. The word first began to be used in its modern sense at the end of the last and the beginning of the present century, at the time when more accurate anatomical investigations of lung diseases, especially by Baillie and Bayle, were undertaken.

Careful post mortem examinations of morbid lungs revealed a variety of conditions, which were called by various names: tubercula, struma, scirrhoma, steatomata. Two forms of phthisis were distinguished, one resulting from pneumonia and catarrh, the other from tubercles. The tubercles were considered to be diseased glands. Attention was called to the many points of resemblance between tubercles of the lungs and scrofulous glands, and hence was evolved the doctrine of the identity of scrofula and tuberculosis, a doctrine held by Von Swieten, Morgagni, Cullen, Portal, and Hufeland.

The exclusive examinations of the lungs, however, and the regarding them as a standard of tuberculosis, led to confusion. Laennec, especially, investigating as a specialist, and considering phthisis as a unity, confounded together a number of totally different conditions, and his great authority has influenced nearly all subsequent investigations. His followers held the cheesy material as the diagnostic sign of tubercles. Even those who, like Lebert, declared against the identity of scrofula and tubercles, considered the cheesy condition of a gland as a diagnostic sign of a tuberculous process. This cheesy material has been the source of numberless errors. It must be borne in mind that it is no specific material, but is simply dead tissue, and may be the last stage of various morbid processes. Any reasonings which regard this dead material as the essential part of tubercles must end in error. Thus, Broussais and Cruveilhier considered tubercles as the result of an inflammatory process, and originated the doctrine of tuberculous inflammation. It is absolutely necessary to hold fast the non-identity of the original processes, and to overlook the identity of the metamorphosis which the tissues can undergo. Then it becomes possible to make the essential distinction that tuberculosis, in opposition to scrofula, is the production of heteroplastic, lymphoid new growths in regions where they do not belong.

The true tubercle has no essential connection with inflammation. Whether its growth is, or is not, attended by inflammatory processes, its character remains the same. It is, however, undoubtedly of an irritative nature, and it is even right to speak of a tuberculous inflammation.

Though tubercles are to be considered as distinct from scrofula, it is necessary to admit their near relationship. Tuberculosis may even be regarded as a heteroplastic scrofula, for the frequent occurrence of both conditions in the same person is otherwise difficult to explain.

There have been various views in regard to the relation between tubercles and the products of inflammation. First, that tubercles are the irritating cause which produce the inflammation. Second, that both tubercles and inflammatory products are formed from a simultaneous exudation. Third, that tubercles are produced from the inflammatory products. The first and last of these views are founded on fact, and can be proved by observation. The second view, that of a tuberculous exudation, was originated by Magendie, and supported by Rokitansky and the Vienna school. They held that the specific material was exuded from a morbid blood, and cited the existence of the well known cheesy material in the alveoli of the lungs as proof. The result of their reasoning and mode of investigation was that the real tubercles of the lung were overlooked. And under the name of gray granulations, in the lung and arachnoid membrane, they have been described by Robin as something new and distinct.

It is in the lungs that the cheesy material has caused the greatest confusion of ideas. After a chronic pneumonia or bronchitis, the alveoli and small bronchi are left filled with the products of inflammation. These thicken, degenerate, and become cheesy; there results what has, since Laennec, been called " tubercular infiltration," but is really a cheesy hepatization. This cheesy material may be found in miliary form, in circumscribed deposits, or involving entire lobes. True tubercles of the lungs arise always in the walls of the air passages, and are not secreted in their cavities.

To avoid confusion, it must be remembered that tubercles exist in various stages of growth and decay, and vary somewhat in different organs. A description, therefore, true of one stage, may be quite false of the others.

The true tubercle is organized, if not vascular; that is, it is composed of living cells. It arises from connective tissue, bone, fat or marrow. It is, therefore, best studied in those parts which are composed of the simplest tissues, such as serous and false membranes; next, in glands with a well defined stroma, as the liver and kidney; with the greatest difficulty in organs, like the lung and brain, of a complex structure.

The young growth looks at first like fresh granulation tissue; it contains very soft, fragile cells and nuclei. These cells are the true tubercle corpuscle, which is not a mere nucleus nor a solid body. They resemble essentially the lymphatic gland cells, are round, and vary in size from a little smaller to threefold that of a white blood corpuscle. The cell body is colorless, transparent, a little granular, and easily broken by pressure or the addition of water and reagents. The nuclei are small, homogeneous, shining, contain nucleoli, and number from one to twelve in a cell. Between these cells is a small, netlike arrangement of connective tissue fibres, and sometimes vessels. The latter are usually not new, but belong to the old vessels of the part.

Lebert's tubercle corpuscle is no original element, but a production formed from cheesy metamorphosis. It can be found not only in dead tubercles, but in pus, scrofulous glands, cheesy hepatization, and carcinoma, after they have undergone the cheesy transformation. It has, therefore, no diagnostic worth whatever.

The young tubercle is a true neoplasm—arises not from an exudation, but from proliferation of existing tissues, or from newly formed connective tissue.

The cellular arrangement of tubercles is repeated in all parts where they reach their acme. But in many regions the acme is never reached, especially in firm, fibrous tissues, and newly formed connective tissues. Here a large part of the tubercular tumor consists of thick connective tissue, whose cells are numerous and contain several nuclei, while only in the centre is a riper growth found. When such a tumor becomes older nothing will be found but a fatty, granular centre and a shell of connective tissue—no cells.

After the first development of tubercles their regular course is to the cheesy transformation, but fatty degeneration, with or without resolution, may also take place. This cheesy transformation begins at the oldest part of the deposit, generally the centre. After the cheesy stage comes that of softening, which also first attacks the oldest portion. In tubercles growing on surfaces, however, the oldest portion is the middle of the surface, and not that of the entire growth. Those who suppose softening begins at the periphery have only observed conglomerate masses, or non-tubercular cheesy deposits. The softening is not the result of the tubercular mass causing inflammation and suppuration of the surrounding tissues. It is a purely chemical process, unconnected with suppuration. The debris of tissue, which form the cheesy mass, separate into smaller and smaller elements, and may even change to a fluid form.

If the softened tubercles are near the surface, as in mucous membranes, there follows ulceration. This takes place through the simple separation of the softened mass, without any suppuration. But as the softening is usually only partial, the bottom and walls of the ulcer are still formed of cheesy material, which gradually also softens and separates, until there is left an ulcer no longer tuberculous, though caused by tubercles. Not until it has thus become a simple ulcer does it secrete pus. These ulcers can be best studied in the bladder. After the separation of the tuberculous matter the ulcer may cicatrize, but this is seldom the case. More often new growths form around and under the ulcer, and the morbid process is constantly beginning afresh. The so-called infiltration is formed when a number of deposits are situated near each other. Through their confluence is formed a continuous, homogeneous, cheesy conglomerate. In mucous and serous membranes, through such a confluence of miliary tubercles results a thick, yellowish white, dry layer, which covers the entire surface, like a diphtheritic membrane. If this takes place in the walls of a tube like the bronchi or ureters, it may even obliterate their canals; and if the mass afterward softens, it will appear like an exudation in the cavity of the tubes.

Large tubercular masses are best studied in the brain and spinal cord. There it can be seen that the mass is formed of lamellæ, and that the growth takes place by the apposition of new gray tubercles, and not of cheesy material.

In the lymphatic glands, there exists a tubercular growth arising from their connective tissue. The glands usually inflame and hypertrophy at the same time. The growth begins as small, grayish spots, in greater or less number, but does not always affect the entire gland. The gland tissue proper becomes soft, reddish gray, and succulent. The gray spots become larger, firmer, harder—and, finally, cheesy. Afterwards the mass may soften. Tuberculosis of the glands is nearly always secondary to that of neighboring organs.

The spleen is one of the favorite seats of tuberculosis. On the other hand the tonsils, the salivary glands, the pancreas, the muscular system, excepting the heart, the thyroid gland, the mammary glands, and the ovaries, show an unaccountable indisposition to take on this process.

The testicles are strongly predisposed to tubercle. The existence of syphilitic growths and of chronic inflammatory processes renders their diagnosis obscure. The anatomical diagnosis of the inflammatory process is not difficult. The gummy tumors are to be distinguished by their situation in the body of the testicle near to the tunica albuginea, while tubercles usually begin in the epididymis. The tubercles always arise from the connective tissue. and never from the epithelium.

In bones, tuberculosis usually arises from the marrow, especially in the spongy bones. The vertebræ and the ends of the long bones are its favorite seat. The process usually takes the form of an osteomyelitis tuberculosa, though in young children a simple formation of tubercles occurs. The yellow marrow first becomes red, then are formed small, grayish granulations, at first scattered, later, grouped together. The surrounding marrow is hyperæmic. Later, these granulations become cheesy, run together, and there result opaque, yellow masses, which contain the detritus of the surrounding tissues. These partly cellular, partly dead masses fill the medullary cavities. At the same time the bones thicken. After a certain time the bone tissue itself is affected, and this may take place in two ways. First the bone tissue changes into soft granulation tissue, in which miliary tubercles grow; or, secondly, the bone surrounding the cheesy masses necroses, especially in the spongy bones. There results a form of caries. Around such dead portions of bone arises a secondary inflammation and suppuration; hence are formed abscesses, which seek the surface by fistulous openings.

In Pott's disease of the spine, the cause may be either such a tubercular process, or more often a true inflammation and suppuration of the bone—osteomyelitis scrofulosa.

If we now consider tuberculosis as a whole, we will notice two characteristics: its heteroplastic formation, and its inclination to multiple eruptions. Both these qualities seem to imply a dyscrasic cause, and the doctrine of a tubercular dyscrasia, or diathesis, has been widely taught and believed. Hence, also, arose the question as to the exclusion and combination of tubercles with other diseases. It may be safely asserted that there is no exclusion of tubercle against other diseases, only against certain organs and tissues. But it never forms part of a mixed tumor. This question loses its interest when tubercle is considered, not as an exudation, but as a new growth.

But now we must ask, whence and how does this growth arise?

It can be definitely stated that connective tissue and its allies are always the matrix. The attempts at determining the cause of the new growth by experiments on animals have proved very unsatisfactory. It is doubtful if true tubercles even exist in them. No one has yet succeeded in forming tubercles by experiment.

There is certainly a local vulnerability and a local immunity of organs. In general, organs normally containing lymphatic elements are those most predisposed to the disease, but there are exceptions which cannot be explained. Also there is a vulnerability and immunity of individuals.

Tubercles are a disease of extra-uterine life; they are hereditary, but not congenital—hereditary not as a disease, but as a disposition. It is probable that not only tubercles, but also syphilis, scrofula and other diseases of parents may cause a predisposition in their children.

The tissues are the carriers of this predisposition, and the younger they are so much more easily is their disposition excited. A disposition to tuberculosis indicates always a disposition to inflammation. Childhood and youth are especially prone to the disease. The fact that in the same family one child is attacked by tubercular arachnitis, another by tubercular osteomyelitis, a third by tubercular laryngitis, does not prove the existence of a dyscrasia, which breaks out now in one organ, now in another. It rather shows that different exciting causes affect different regions, all having the same predisposition. The predisposition is not only hereditary, but is produced by all causes which debilitate the general system.

Tubercle resembles malignant growths, in that it infects neighboring tissues. Thus, in mucous membranes and in other organs, the original growth causes the formation of new growths in its neighborhood. There is also found a secondary tuberculosis of the glands, as in the mesenteric glands after intestinal tuberculosis, and in the bronchial glands after tubercular bronchitis. Metastases in distant organs, also, are produced.

The contagiousness of tubercles or their inoculability has not yet been demonstrated.

It seems probable that tubercles may be at times epidemic. It may be that, as with plants, so with tumors, certain seasons of the year produce an increased growth. These questions require further study.

The indications of treatment are: When possible, extirpate the tuberculous mass early, as in the testicle, the glands, the bones, and joints. When this is not possible, we must, first, fight against the predisposition by every means which will improve the general health; and, secondly, carefully avoid all irritating causes, for a slight catarrh or inflammation of no moment in a healthy constitution, in one disposed to tubercles brings a new growth in its train.

On the Pathology of Reflex Paralysis, and its Relation to the Sympathetic System. By M. GONZALEZ ECHEVERRIA, M.D., Physician to Charity Hospital, New York.

[Concluded.]

It may seem, perhaps, strange to find excluded from the preceding Dr. Gull's cases of paraplegia associated with gonorrhœa and stricture of the urethra.[1] They certainly afford

[1] Medico-Chir. Transact., 1856, Vol. xxxix., p. 195.

the most valuable evidence of the organic lesions which may disturb the nervous functions in the course of urinary affections; but they could not be properly classed with the above cases, and I will briefly adduce the reasons for this opinion. The first case reported by Gull is one of paraplegia following gonorrhœa and syphilis. The paralysis occurred subsequent to the second syphilitic infection of the patient, three days after he had slept in a damp bed, and I would not dispute that this circumstance favored its development; but is it not probable, from the disproportionate relation between the degeneration of the spinal cord—detected with the microscope—and the shortness of the paralysis, that this was rather a direct result of the existing syphilitic affection? The characteristics of the disease and of the spinal alterations described by Gull, the osseous plates on the visceral layers of the membranes, are, indeed, no uncommon phenomena with syphilitic affections of the spinal cord. Therefore, why not consider this as one instance in which exposure to cold, and not the urethral affection, concurred to hasten the progress of the syphilitic change undergone by the spinal cord?

The second case is one of paraplegia, acute spinal arachnitis and softening of the cord, following retention of urine from stricture. The autopsy was made by Dr. Habershon, and, as acknowledged by Gull, phlebitis caused by the catheterism lighted up in higher degree the inflammation existing in the vesical veins in the neighborhood of a pelvic abscess, and which was propagated to the vertebral lumbar region, where one of the veins was found full of well formed pus. The etiology of the paralysis is here very plain, notwithstanding the difficulties of recognizing it prior to the cadaveric examination.

This case is of a quite different nature to that of Kussmaul, Case vii., with which it is associated by Dr. Mitchell,[1] assuredly from want of details in the brief reference made to it by Jaccoud. In such instance, as copied from Kussmaul, there was no lesion of the vertebral canal, and the tissue of the cord, firm throughout, was free from any degeneration whatever apparent to the naked eye or under the microscope. The athe-

[1] Paralysis from Peripheral Irritation, p. 11.

romatous change on the aorta abdominalis, the hypogastric and other arteries of the lower limbs, is not mentioned in connection with the blood vessels of the spinal cord, and, as asserted by Kussmaul himself, the paresis was altogether caused by the degeneration undergone by the sciatic nerve, and probably, also, by the nerves of the sphincters and bladder. It is true, that on alluding to the above *arteritis deformans*, Kussmaul remarks that it may, in an advanced stage, possibly become a source of paraplegia from interrupted nutrition of the lumbar plexus.

The following is the history of the third case related by Dr. Gull in the Medico-Chirurgical Transactions: "Henry F., æt. twenty-one, a pale and delicate man, a shoemaker; habits irregular; has had gonorrhæa many times, and is subject to a permanent gleet, increased when he indulges in drink. His general health has been good, and he was, so far as he knows, quite well on Tuesday morning, March 1st, 1853. In the afternoon of that day he began to have pain between the shoulders, and a diarrhœa came on, to which he had been frequently subject. This continued during the night, with increased pain in the back and spasmodic tremblings in the legs. Toward morning the legs became weak and numb, and he was unable to void his urine. His friends, for his relief, applied hot fomentation to the feet, legs and pubes, which produced extensive vesication. He was brought to Guy's Hospital, March 4th, and admitted under the care of Mr. Bransby Cooper, with the following symptoms: complete loss of motion below the sixth dorsal vertebra; the muscles of the seventh intercostal space do not act in respiration; sensation perfect above the line indicated, but on the abdomen pinching or pricking the skin gives no pain, and only the faintest sensation; in the legs there is complete anæsthesia; bladder distended, with dribbling of urine; great exhaustion; pulse 110, weak; respiration tranquil, 24; febrile heat; tongue injected; complains much of thirst; spine quite straight; a slight degree of tenderness and some sense of stiffness between the shoulders. At the epigastrium and about the penis, thighs and ankles, the integuments are vesicated, and the skin is, in parts, sloughing from the hot fomentations which have been applied, and last night, in addition, several bullæ formed spontaneously on the left ankle and on the soles of the feet. No bed-sore; feces healthy, passed involuntarily; urine, drawn by catheter, ammoniacal, and containing mucus and pus, with traces of blood."

"He died from irritation fever and sloughing, March 15th, a fortnight from the beginning of the paraplegic symptoms. Sectio cadaveris: Several superficial sloughs over the legs and abdomen; large sloughing bed-sore over sacrum; bullæ on the soles of the feet; bones and ligaments of the spine healthy. The cord was generally softened as high as the middle of the dorsal region, at which point the nervous substance was broken up by the gentlest stream of water falling on it. The gray and white portions appeared to be equally affected. Amongst the softened nerve tissue granule cells were abundant. There was no point of suppuration, nor any trace of old disease in the cord. The membranes were apparently healthy; liver healthy; kidneys of a dark color, from venous congestion; the mucous membrane of the pelves slightly ecchymosed; bladder thickened, and the lining membrane covered by recent diphtheritic exudation. Between the bladder and rectum there was an irregular abscess, with sloughing walls, communicating with the bladder by a large perforation of its coats. Near the bulb was a more recent abscess filled with healthy pus. The lungs collapsed freely on opening the chest, and were free from disease; heart healthy."

It appears to me that sudden occurrence of myelitis (for such, I should judge, was the spinal disease in the above instance) in a patient who had a gleet, but was otherwise quite well, does not distinctly involve a relation between the morbid condition of the spinal cord and urethra. Accordingly, I should hesitate very much to admit such a doubtful causation of the spinal symptoms. Their acute nature and their sudden appearance, without any previous exacerbation of the urethral trouble, are phenomena very much against the assumption; therefore, it would be as gratuitous to make such an affirmation from the mere coincidence or successive development of two morbid states, without marked bearing on each other, as it has been to assure the existence of functional paralysis without any peripheral or central nervous lesion. Dr. Gull, himself, in his valuable paper on Paralysis of the Lower

Extremities consequent upon Disease of the Bladder and Kidneys,[1] reports two examples of paraplegia, one with early symptoms simulating incipient phthisis, the other preceded by colics. To these early phenomena, taken individually, might have been erroneously ascribed the cause of the disease, originating in the first case from a tumor in the spinal membranes, and in the second from inflammation and softening of the cord. I remember seeing, in the Charity Hospital of Paris, the next case, whose curious history was communicated to the Biological Society by Dr. E. Fournier.[2] The patient, under Dr. Nonat's care, died with incomplete paralegia, erratic erysipelas, and gradual impairment of the intellectual faculties. He had remained over four months in the hospital, and upon his admission commenced to pass purulent urine. Cauterization of the back relieved him from pain, but electricity applied to the limbs was of no avail to make the incomplete paralysis disappear. The autopsy disclosed: Softening and hyperæmia of the brain; at the origin of the dorsal region a round tumor, the size of a small nut, between the dura and pia mater, loosely adhering to the membranes, and pressing on the cord already atrophied at this level. Kidneys and bladder very much altered; the former enlarged, darker than natural, and much congested; the latter thickened, containing about a glass full of a greenish, pitchy urine, and with a black lining membrane, constricted, dividing the bladder into two nearly equal cavities. No stricture of the urethra.

Jaccoud, noticing the facility with which one is misled in looking for the relation between paraplegia and urinary diseases, refers to the above case of Fournier, and to this other, no less instructive, of Mannkopff.[3] A patient exhibiting symptoms of nephritis and cystitis had pain in the loins, irradiating to the lower limbs, and became paraplegic; the paralysis was

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[1] Guy's Hosp. Rep., Third Series, Vol. vii., 1861. Cases of Paraplegia, pp. 145, 179.

[2] Mém. de la Société de Biologie, Tome v., 3ème Série, 1858, p. 24.

[3] Les Paraplégies et l'Ataxie du Mouvement, 1864, p. 377; and Mannkopff, Paraplegie bei einem Complicirtem Rückenmarksleiden. Berlin Klinik Wochenschr., 1864.

complete in the right limb, and incomplete in the left. Death occurred at the end of six weeks. On cadaveric examination, it was found: Suppuration of the cervical region of the cord, and of both mediastina, with thickening of the posterior half of the pleuræ; purulent infiltration of the intervertebral foramina, and an inflamed fatty tumor, between the vertebræ and the posterior half of the dura mater, extending some inches down from the lower extremity of the cervical enlargement.

Whether we look upon the described anatomo-pathological evidences as the result of a lesion commencing on the peripheral nervous system, or whether we might again suppose that they at first originated in the muscular or vascular structures, to involve afterward the nervous system, it is undeniable that this latter was the seat of a material change, with common features in most of the cases. We may, thus far, sum up these alterations: a congestive state of the meninges; atrophy and granular degeneration of the anterior and lateral columns of the cord; same degeneration of the anterior cornua of the gray substance, not extending much further than the intermedio-lateral tracts; more or less abundance of corpora amylacea in both substances of the cord, especially with infantile paralysis; granular degeneration of the nerve cells, with hypergenesis of brown pigment granules, mainly in those of the sympathetic ganglia; hypergenesis of nuclei and fibres in the neuroglia and connective tissue of the ganglia; and, finally, a fatty granular degeneration of the peripheral nerves—*neuritis propagata*—capable of being the only lesion accounting for the paralysis.

Dr. Thomas' case is one of the few in which the spinal alteration in paraplegia from wet and cold has been described. This paraplegia *a frigore* should not be confounded with rheumatic paraplegia, from which it differs essentially, as Jaccoud remarks. Its post mortem traces, as far as I have been able to ascertain, are accurately noticed only in five other instances—one of them communicated by Frerichs to Jaccoud, who has collected three of the examples with which I was acquainted, leaving unnoticed the fourth, reported by Gull.[1] In this case paraplegia came on suddenly after fatigue and exposure to

[1] Guy's Hospital Reports. Third Series, Vol. ii., 1856, p. 168.

cold, and unattended by any derangement of the general health. There was softening of the cord in the dorsal region; on microscopical examination the spinal columns were found to be the seat of masses of granular exudations, either free or collected around softened and broken up nerve tubules; there were also granule cells throughout the dorsal and lower part of the cervical region. These cases, though of same etiology, vary in cadaveric appearances from that of Dr. Thomas, reported here, and on this account I have thought better to call separate attention to them. I could not condense the record of the other four better than has been done by Jaccoud,[1] from whom I borrow the following summaries:

A girl, aged 20, noticed a weakness of the lower limbs from the time she had crossed a brook. During three years she exhibited several alternatives of improvement and relapse, the paralysis persisting, however, incomplete and reduced to a mere paresis. At the end of these three years paraplegia ensued, with relaxation of the sphincters ani and vesicæ, paresis of the extensor muscles of the right side of the trunk, with curvature on the left, and finally bed-sores, hectic fever, general œdema, and death. Cadaveric examination showed: hyperæmia of the pia mater and sclerosis of the spinal cord, the lesion exhibiting itself—quite exceptionally in the longitudinal direction—on isolated patches of induration disseminated along the cord. The patient had had, in addition, cerebral symptoms, and the sclerosis was also detected in one lateral ventricle and the pons varoli.[2]

A man, æt. 51, after exposure to wet, slept a few hours in the open air, with his undried clothes on. Two days after he became paraplegic, and in three days more paralysis assumed an ascending march, death ensuing the twelfth day from the outset of the symptoms. On post mortem examination many softened portions of the cord, with a considerable amount of spinal fluid, were detected.[3]

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[1] Op. cit., pp. 250, 381.

[2] Valentiner, Ueber die Sklerose des Gehirns and Rückenmarks, Deutsche Klinik, 1856.

[3] Walford, Softening of the Spinal Cord, Association Medical Journal, 1854.

A man, æt. 37, under the care of Oppolzer,[1] became paraplegic after a fall upon the ice. Post mortem examination disclosed softening of the spinal cord. Microscopic search showed the nervous elements altogether destroyed, mainly on the antero-lateral columns. On the most altered space, at the level of the sixth dorsal vertebra, the nerve fibres were undistinguishable, and there was, in addition, a great deal of molecular granulation and fatty globules.

Frerich's case is the following: A child, sitting on a stone for several hours, during very cold weather, was the next day taken with fever, the following with paraplegia, and within a few days more died. On post mortem examination there was found exudative meningitis throughout the vertebral canal.

It is obvious that meningitic congestion and the evidences of myelitis, if such did exist, were by no means as far advanced and unmistakable in Dr. Thomas' case as in those just quoted.

I have found nowhere a description of the change which the sympathetic seems to undergo in reflex paralysis. Rokitansky "has not unfrequently observed a withered state of the ganglia, a shrinking and leather-like toughness of them, while their color has either altogether disappeared or is changed to a rusty brownish, yeast yellow, fawn or slate gray. It appears frequently to be a primary affection; but in many cases it is a secondary consequence of previous disease. The chief example of it is the wasting of the abdominal ganglia which follows typhus, and forms one of the few cases which can be found by the knife of the anatomist for the sickly state succeeding typhus (Typhussiechthum.")[2] To this state of the ganglia might be, perhaps, ascribed the occurrence of paraplegia upon typhoid fever, independently of lesion in the muscular system.

I have had no hesitation, since I commenced to study the pathology of reflex paralysis, in considering it induced through the agency of the sympathetic system. My assumption was based on the intimate connections between the nerves usually

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[1] Acute Entzündung mit partieller Erweichung des Rückenmarks, Spital's Zeitung, 1860.

[2] Rokitansky, Pathological Anatomy, Phil., 1855, p. 344.

affected and the ganglionic system. The spinal origin of the latter and its important influence in the causation of fever and convulsions, often premonitory symptoms of reflex paralysis, most strongly sustain such views. I therefore admitted that exhausted incitability of the spinal cord and ganglia were initial phenomena with the disease,[1] at the same time acknowledging, with Brown-Séquard, that vascular spasms of the cord were important elements in the production of the paralysis, and that this was unattended by alterations in the cord. But I accepted the statement with reserve, expecting that the microscope would ere long reveal changes in the structure of the nervous elements better explaining the true nature of this peculiar paralysis. These opinions I have, since 1861, tried to impress on my class, in lecturing on Nervous Diseases, at the University Medical College of New York. The inquiries continued since that date seem to confirm, thus far, the correctness of my expectations.

This theory of abolished power in the nervous centres as a cause of reflex paralysis, was at first conceived by Gull, afterward by Eisenman, 1860, Handfield Jones, *inhibitory paralysis*, 1861, and latterly by Jaccoud, and Drs. Mitchell, Moorehouse and Keen. The last three distinguished physicians suggested[2] that "irritation of the vaso-motory nerves, in a limited part of the spine, might produce contraction of its capillaries, anæmia, nutritive changes, and finally a relaxation of these vessels, which would be more apt to be a lasting condition, and would in fact constitute congestion. Such a series of consequences may very possibly occur, and would no doubt be competent to cause a paralysis, whose site, extent and character would depend upon the part of the nerve centres affected by the excitation." This hypothesis agrees with the one I sustained[3] prior to my ascertaining the cadaveric changes which might attend reflex paralysis, and is still sufficient to explain the temporary paralysis consecutive to exhaustion of the incitability of the cerebro-spinal and ganglionic centres, and disap-

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[1] Am. Med. Times, 1861, Vol. ii., p. 315; Vol. iii., p. 36.

[2] Circular No. 6, Reflex Paralysis, March 10, 1864, pp. 16, 17.

[3] Am. Med. Times, Vol. iii., p. 36.

pearing on removal of the excitation which produces it. I am in this opinion supported by Jaccoud, who furthermore adduces that the convulsive stage usually precursory of reflex paralysis is indicative of exaltation preceding the exhaustion of nervous force. The following cases, observed by Nonat and myself, afford strong evidence in favor of these views.

A young, unmarried lady, aged 22, was affected with metritis, intra-uterine granulations, spasmodic contraction of the cervix uteri, vaginitis, and peri-uterine abscess, attended with general nervous symptoms. She underwent a lengthy antiphlogistic treatment, and several uterine cauterizations. The first application of nitrate of silver to the cervical canal was followed by complete anæsthesia in the lower extremities. Afterward, every intra-uterine cauterization produced loss of consciousness, with momentary paralysis of the lower limbs, and on one occasion the right leg remained as though paralyzed, for several weeks after the operation.[1]

A lady, after a third miscarriage, remained with enlarged uterus, extensive ulceration of the cervix, and metrorrhagia. A mild induced electric current applied to the cervix uteri awakened contraction of the organ and stopped the hemorrhage, but was immediately attended with severe pain in the pelvis and lower extremities, tremor and numbness in the limbs, general perspiration, and the secretion of milk, having stopped for five days, was again re-established. Pain subsided on discontinuing the application of electricity; but the lower limbs remained paralyzed, and did not recover completely their functions until fourteen hours after the above operation.[2]

These instances are positive proofs of the above statements. Jaccoud, on quoting the second case, very justly remarks that it seems to be a reproduction of the paralyzing effects which a constant electric current is capable of determining when applied to the spinal cord and nerves, as demonstrated by the experiments of Valentiner, Matteuci, Du Bois Reymond, Weber, Riter, Pfluger, Remak, and Baierlacher. Therefore, always acknowledging exhaustion among the causes of reflex paralysis, and

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[1] Nonat, Maladies de l'Uterus, 1860, Obs. lxx., p. 830.
[2] Am. Med. Times, 1863, Vol. vi., p. 2.

without denying the contraction of the blood vessels of the cord, which I, however, consider a secondary element, it is proved that a material alteration undergone by the spinal cord and ganglia, as well as by the nerves and muscles, in fatal cases of reflex paralysis, has, on closer examination, been detected. I believe, furthermore, that there are cases, such as those of progressive locomotor ataxy, progressive muscular atrophy, etc., which will probably be included in the same class of paralysis due to original lesions of the sympathetic. This classification will be possible when we become more familiar with their etiology, and the morbid changes they occasion in the sympathetic system.

I am not the first to bring to light this influence of the sympathetic on reflex paralysis. Morgagni, Camper, Portal, Boisseau, and recently Romberg, Grisolle, and Axenfeld, assert that the origin of functional or sympathetic paralysis is to be found in the ganglionic system. Romberg[1] says, "As yet the reflex neuroses, for which the sympathetic and its ganglia offer the most productive soil, have not in any way been cleared up by the scalpel or microscope, even as they occur in the brain and spinal cord." We would also remark, in relation to paraplegia from renal disease, that W. Hinds[2] has advanced the opinion that the paralysis is produced by the extension of the renal disease to the lumbar plexus, and admits that its close proximity to the kidneys allows the morbid process to extend from one to the other. In 1857, Spencer Wells,[3] in relation to the same subject of urinary paraplegia, made in one of his lectures the following statements: "If you disturb the normal condition of the sympathetic nerves supplying the kidneys and bladder, you need not be surprised at an alteration in the condition of the spinal nerves with which the disordered sympathetic nerves communicate, or in the conditions of the muscles which derive their motor power from the spinal nerves, whose relations with the sympathetic have been disturbed." . . . . "Another reason for supposing that the sympa-

[1] Op. cit., p. 336.

[2] Brit. Medical Journal, April 9th, 1859, p. 290.

[3] British Medical Journal, 1827, p. 495.

thetic nerve plays an important part in this form of paraplegia is that gastric derangement is generally a very early symptom. . . . . Admitting the influence of the sympathetic, you can explain them readily enough by the intimate connection of the renal and solar plexuses, without bringing chemistry to your aid."

I have already cited a case from Le Bret, which prominently shows the relation between the sympathetic and reflex paralysis. I take from Gubler[1] the following no less important one observed by Pidoux, at Lariboisière Hospital. A man, aged 52, and in very unfavorable hygienic conditions, was affected with pneumonia on the left side. Cupping, blistering and kermes, with quinine, were resorted to, and the patient entered upon convalesence on the eleventh day. From this date he had mydriasis of the left eye, with ptosis, and in a few days after paralysis of the tongue and pharynx. There was no evidence of intra-cranial exostosis, or syphilitic fibro-plastic exudation at the base of the brain. Subsequently the fingers became numb, with difficulty of executing any delicate movement or grasping. Eight days after the onset of these last symptoms there were paleness and coldness of the feet, with insensibility of the sole, difficult gait, staggering, without paralysis of the pelvic viscera. Stimulant frictions, nux vomica, sulphur baths, quinine, aloes, etc., good food and coffee, brought about diminution of the paralysis with complete recovery, in about six weeks from the initial accidents attending the convalescence.

Gubler, guided by his former researches on the redness and heat of the cheeks as a sign of pulmonary inflammation,[2] explains the paralysis of the tongue and pharynx in the above case, by *depression* conveyed, in a reflex manner, through the nerves of the respiratory apparatus to the part involved. He is, moreover, inclined to give such sympathetic character to the phenomenon, on account of the exceptional early loss of sensibility and motory power in the arm, which necessarily makes us look for their cause in conditions of close organic proximity. I would rather accept another view suggested by Gubler, and

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[1] Archives Générales de Médecine, 1860, Tome ii., p. 718.
[2] Union Médicale, Avril et Mai, 1857.

which would explain the redness and increased temperature of the cheeks by paralysis of the sympathetic, capable otherwise of bringing about the other noticed symptoms. The paleness and coldness in the limbs, their insensibility, and the mydriasis, are phenomena, however, very much opposed to this latter opinion, inasmuch as they are consecutive to irritation of the sympathetic, capable of being, in addition, attended with paralysis as well as with hyperæmia. Let me state that Gubler also admits the possibility of peripheral paralysis being produced by the inflammatory process extending to the neighboring nerves. The existence of paralysis in the throat and arm prior to that of the lower limbs may be readily accounted for, remembering that sympathetic ganglia are centres of reflex actions, always localized in the regions where they originate, and incapable of being general over the organism, or of having a decussated effect, unless they pass through the spinal cord. Another cardinal fact is, that these very local reflex actions, having their centre in the ganglia, are set up, not after special irritations, but after those equally acting on the nerves generally, the former determining their effects exclusively on the cerebro-spinal system. Bernard, who has established these fundamental principles, has proved, beside, that there is a paralyzing reflex agency peculiar to the sympathetic.[1] On accepting this explanation, I am far from excluding the latter one admitted by Gubler, since, undoubtedly, neuritis is a frequent cause of peripheral paralysis. Another important cause of amyosthenia, which Gubler puts forward on explaining paralysis from pneumonia, is the want of hematic oxydation due to the lesion suffered by the respiratory apparatus. The assumption is moreover sustained by similar effects observed in asphyxia. Richardson[2] has established, taking the suggestion from Snow, that suspended oxydation in the tissues is a necessary requisite for anæsthesia. As Richardson lays it down, this arrest of oxydation means, in the end, arrest of motion, and no doubt this inertia in the molecules of the organ, whatever be its origin, is the principal element in paralysis generally.

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[1] C. Bernard, op. cit., pp. 344, 388, 390.

[2] Med. Times and Gazette, Feb. 3, 1866, p. 115.

Apart, however, from poisoning, which may at once arrest the nervous functions, or from inflammation, the peripheral nervous changes may be also induced by a deranged nutrition supervening upon a contaminated state of the blood, as in diphtheria, typhoid fever, rheumatism. The sympathetic, in these cases, may become the source of altered activity in the muscles, either operating directly on them or through the blood, modified in its quality. It is a fact of observation that the derangement of the sentient and motory nervous system, following disturbed action of the sympathetic, is of common instead of rare occurrence in reflex paralysis. As to the temperature of the paralyzed limbs, it has been noted by accurate observers to be more or less diminished, and I have very frequently found it to be so. It is not, again, a rash inference from the peculiar migration of the paralysis from one to another organ, and from the variable degree in which the parts are respectively involved, to think that the ganglionic system is and may solely continue affected until the lesion reaches the spinal cord. This view would explain why, in cases of local paralysis, one set of muscles is only damaged, while others supplied by branches of the same nervous trunk remain unaffected. I am not the only one, indeed, disposed to contend that the nervous derangements which are chiefly seated in the peripheral system during the course of typhoid and other fevers, diphtheria, etc., have this ganglionic source. Fritz,[1] who has made a valuable inquiry into the spinal symptoms of typhoid fever, considers the above phenomena as independent of any cerebro-spinal influence. He says that Griesinger, being attacked with typhoid fever, observed from the commencement a loss of sensibility in the mucous membrane of his mouth, without any other alteration whatever. Arthritic pains are noted by Gendrin, and Poulet has, during an epidemic of typhoid fever, observed that odontalgia, otalgia, and pleurodynia existed prior to any other symptom of the fever. I have already noticed the ganglionic degeneration described by Rokitansky in cases of typhoid fever, a fact not to be disregarded in connection with the views here sustained.

[1] E. Fritz, Études Clinique sur divers Symptoms Spinaux observés dans la Fièvre Typhoïde, 1864, p. 69.

I have alluded to reflex actions pertaining to the ganglionic system, which Fletcher considers as the source of all irritability in the body, but there is additional evidence of the automatic power of the ganglia to be centres of movements, independently of the spinal cord. Graves[1] was one of the first to call attention to a symptom occasionally observed in reflex paraplegia. "The patient," says this author, "complains of tenesmus, and thinks he is about having an attack of piles." "The same observations apply to the bladder, with this exception, that the morbid irritability of this organ occurs occasionally after the disease is confirmed and has made considerable progress." It is, indeed, curious to find that section of the lumbar nerves, or of the pneumogastric, is followed by identical phenomena as those pointed out by Graves in the sphincters ani and vesicæ, and in the cardiac orifice of the stomach. The persistence of such singular contraction, often prolonged for a considerable time, is due, according to Bernard, to the influence of the numerous ganglia in the vicinity of those organs.[2] Ollier, d'Orleans,[3] examined a monster fœtus anencephalous, in which the spine was open from the base of the skull to the renal region. The spinal cord was lying underneath a transparent membrane; it began in a bifid extremity at the base of the cranium, and had a ribbon form about one and a half lines thick. This cord had no communication whatever with the nerves: they had, respectively, their origin in a ganglionic extremity, situated in the intervertebral foramina. During pregnancy the movements of the fœtus could be distinctly detected by palpation, and when born the monster remained motionless, notwithstanding the care taken with it. Instances are reported by Fauvel and Méry, in which the anencephalous fœtus lived some hours, and Lallemand mentions a case in which the movements of an anencephalic fœtus were all the time felt by the mother. On the other hand, Velpeau[4] has presented several examples of destruction of the cord with preservation of movement in the limbs, reported by Ollivier, Rullier, Bayle, etc., and since

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[1] System of Medicine, Phil., 1848, p. 362.
[2] Op. cit., p. 380.
[3] Comptes Rendus de la Soc. de Biologie, Tome ii., 1ère Série, 1850, p. 106.
[4] Archiv. Gén. de Médecine, 1825, Tome vii., p. 329.

that time other similar cases have been recorded. Finally, a parasitic monster has been described by Chauveau.[1] It was mostly constituted of the posterior limbs, and in one of them only the sciatic nerve existed, connected with a lateral mass of conglomerated spinal ganglia, thus evincing their capital influence on the functions of the peripheral nerves, and their trophic power discovered by Waller.

Romberg,[2] alluding to the influence exerted by the sympathetic upon the contractile elements, says: "In this respect, the skin demands an especial consideration; and it is, indeed, strange that the veterinary surgeon pays more attention to its vigor or tone in animals, than the physician does in diseases of human beings. In intestinal gangrene, in which there is an undoubted paralysis of the sympathetic, we find the skin presenting a similar condition as in Asiatic cholera."

Sir Henry Holland,[3] after presuming that the ganglionic nerves are those which chiefly give their appropriate irritation to the blood vessels throughout the body, says: "We have often local changes in circulation, rendered very singular by the preciseness of their limitation to certain parts, in accordance with the distribution of particular nerves. This is well seen in certain slight and partial paralytic affections, where a portion of a limb, or even one or two fingers, may become bloodless, while the others retain their natural state. I have also seen cases where the perspiration of a palsied limb was singularly altered in the quality of the matter perspired." This last phenomenon has been remarked by several other observers. Abercrombie[4] says that "a child, mentioned by Dr. Falconer, became pale and emaciated on the whole left side of the body, without any diminution of muscular power, the right side remaining healthy. She recovered by the use of warm pumping." Travers[5] calls *prostration without reaction* the paralyzing influence transferred from cerebro-spinal to sympathetic nerves and ganglia. Failure and disappearance of the pulse, weakness

[1] Journal de la Physiologie de l'Homme, 1863, Tome vi., pp. 346 and 361.

[2] Op. cit., p. 338.

[3] Medical Notes and Reflections, 3d ed., 1855, p. 135.

[4] On the Brain and the Spinal Cord, Phil., 1836, p. 236.

[5] An Inquiry concerning that Disturbed State of the Vital Functions usually denominated Constitutional Irritation, London, 1827, p. 106.

and fluttering of the heart, coldness and lividity of the cheeks and lips, apathy, unembarrassed consciousness, sopor, with difficult respiration, relaxation of the sphincter, and convulsions—such are the main symptoms of this state.

I am attending, with Dr. L. A. Sayre, a boy with infantile paralysis, supervening upon fever and gastric derangement. The left limbs are paralyzed. When I first saw him, the leg was very much atrophied, cold, and very sensitive, especially near the joints. The left pupil was larger than the right; capillary circulation in the cheek and ear of the same side was very irregular, the skin of those parts presenting congested patches, with more or less dilatation of the left pupil. In addition to these symptoms, from the commencement of the disease the boy has been troubled with epistaxis, difficult to stop. The galvanic excitation of the lower limb, or the hypodermic injection of strychnine in it, has been attended with immediate dilatation of the left pupil, greater congestion, with increased temperature of the face, dizziness, and perspiration in the left hand. These phenomena were very perceptible at the beginning of the treatment, and have now subsided with the improved condition of the limbs—their intensity, however, being in relation with the alternatives shown by the paralytic state. In all the cases epistaxis has been preceded by redness of the left ear and cheek.

Velpeau[1] describes the case of a very robust soldier, in the Hospital of Tours, who had insensibility and complete loss of voluntary power of the right arm, from the shoulder to the middle of the forearm. The hand was not in the least affected, the skin of the insensible parts was livid or bluish, like that of the face in persons suffering from aneurism of the right heart. This man never had pain in the back, and passed unaware into this condition, without any appreciable cause. Frictions with tincture of cantharides and other excitants proved useless, until, tired of having remained three months in the hospital, he left it without experiencing any change in his disease. However, three months after, the limb had insensibly recovered its functions, without any remedy.

[1] Sur une Altération Profonde de la Moelle Allongée, etc., Arch. Gén. de Méd., 1825, Tome vii., p. 81.

Stronger evidences of the irregularities of circulation in relation to paralysis, and mainly due to lesion of the sympathetic, are the following interesting examples, taken from Abercrombie.[1] "A lady, mentioned by Dr. Storer, was recovering from a pneumonic attack, when one morning, after a restless night, she was suddenly seized with an acute pain in the left shoulder, extending to the arm, and at the same time the whole left side became paralytic. The leg retained an obscure degree of motion and feeling, but the hand and foot were insensible to the prick of a needle. The parts were cold, and all the arteries in them were without pulsation. On the right side of the body the pulse was of a good strength, and a little frequent. After a few hours the pain shifted to the leg and foot; and she had also some obscure pain in the forehead, which was removed by bleeding with leeches. The pain of the leg and foot abated after twelve hours, and she had then no complaint except the paralysis. For several days she seemed to be improving a little in the motions of the parts, but they continued cold and without pulse; on the fifth day, she had an uneasy feeling in the epigastrium, with sense of suffocation; her breathing became short and hurried, and she died in the night. A gentleman, mentioned also by Storer, was seized with paralysis of the right arm as he sat at breakfast, having been previously in perfect health. He did not complain of any pain, but the arm was pale, and every part of it without pulse; in the left arm the pulse was natural. After four hours he became faint, with quick and laborious breathing, and frequent pulse, and in two hours more he died. The body was not examined." In the Transactions of a Society for the Improvement of Medical and Surgical Knowledge, Vol. iii., from which these cases are copied by Abercrombie, Dr. Wells has described that of "a gentleman subject to cough and dyspnœa, who awoke one morning with a severe pain in the left arm; in the afternoon it became benumbed and paralytic. The pain then ceased, and the arm was found to be without pulse. He continued in this state for two days, without any other complaint, and on the third day he died suddenly, as he got up to go to stool. The

[1] Op. cit., p. 233.

paralytic arm only was examined after death, and in it no morbid appearance could be detected." By way of contrast with these cases, I will briefly mention the most important details of a remarkable one reported by Sir Henry Holland.[1] "A boy, four years old, had been bled to the extent of nearly 30 ounces. He was delirious; the pulse 120 to 136, hard, and with a tense vibrating thrill in all the arteries, especially those of the head—which I do not remember equally to have noticed in any other case—and felt in the smallest artery to which touch could be applied. Nearly six weeks from the earliest date of the illness dropsical symptoms came on and rapidly increased. All the preceding symptoms, and notably those of the cerebral irritation and disordered action of the arteries, abated in the same ratio as these dropsical symptoms came on."

It may be supposed that the cases cited from Abercrombie were due to arterial embolism. Such an idea could not be entertained, especially as regards the first case. Hemiplegia, upon cerebral embolism, is usually attended with facial paralysis, and other cerebral symptoms absent in this instance; the accident is never attended with complete anæsthesia before gangrene sets in in the limbs; their sensibility and temperature are increased instead of being diminished, and with these symptoms the limbs exhibit in addition more or less signs of partial mortification, from arrested circulation. These are, at least, the results established by E. Lanceraux, in his valuable monograph "Sur la Trombose et l'Èmbolie Cérébrales." (Paris, 1862.)

I wish to point out a very curious fact, nowhere noticed, as far as I have been able to ascertain, except in two cases of reflex paraplegia, related by H. N. Victor Robert,[2] viz., permanent contraction in the muscles of the paralyzed limbs. This contraction—which may, without paralysis, be one of the sequelæ of typhoid fever—I have met with in a young man, who had paraplegia also, consecutive to typhoid fever, and in a woman with uterine paraplegia, attended with great tenesmus. I, of course, do not refer to the less infrequent contraction of muscles antagonistic to those involved in local paralysis. In the

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[1] Op. cit., p. 137.

[2] De la Paraplégie consécutive a la Fièvre Typhoïde, Thèse, 1862, pp. 18, 24.

cases cited the contraction was not general with the muscles of the lower limbs; it mainly existed in the feet, keeping the toes strongly flexed. Extension of the contracted muscles was painful; however, by gently exerting it, the toes could be relaxed, to resume afterward their primitive condition. In either instance there was a marked degree of anæsthesia, which, together with the contraction, was cured by local application of galvanic electricity. Friedberg,[1] under the title of *myopathia dyscrasica*, reports the following interesting case, showing a muscular lesion without derangement of the nervous system as the only cause of paraplegia following typhoid fever. A girl, sixteen years of age, five weeks and a half after being cured of typhoid fever, was taken with pain in the lower limbs, which disappeared to be replaced by deep-seated numbness, without impairment whatever of cutaneous sensibility, and with convulsive jerkings of the legs, lasting a few days. The patient could not walk nor stand on her feet, nor leave her bed, on account of permanent flexion of the legs on the thighs. There were no signs of muscular atrophy or articular lesion in the lower limbs. Electric sensibility and contractility were lessened in the extensor muscles of the legs. Being in such a condition, the girl was taken, after a meal, mainly of potatoes, with symptoms of intestinal perforation, and died twenty-four hours after. On post mortem examination there were found portions of food in the peritoneal cavity, which had passed through a lacerated cicatrix at the level of the middle third of the jejunum. The brain, spinal cord, and nerves were quite sound, but the extensor muscles on both legs exhibited a remarkable alteration, consisting of suggillations and small abscesses, some containing liquid, others solid pus, while in other places the primitive muscular fibres had undergone a granular fatty degeneration. The coats of the capillary vessels in the triceps of the right side were infiltrated with fat.

I will state, finally, concerning the muscles, that I have found them in infantile paralysis unresponsive to the electric current, without being, however, in a condition of fatty sub-

[1] Pathologie und Therapie der Muskellähmung, Leipzig, 1862, Obs. ix., and Jaccoud, op. cit., p. 395.

stitution, as admitted, under such circumstances, by Duchenne de Boulogne. I should add, in evidence, that in cases of reflex paralysis the application of an induced current to muscles distant from those of the affected regions, often determines contraction of those which did not respond to the direct application of electricity. I have noticed this phenomenon especially in infantile paralysis, when faradization of muscles of the anterior femoral or of the gluteal region has determined manifest contraction of the gastrocnemius, or of the extensor digitorum, which did not appear on the current being directly applied to these very muscles. As to the muscular structure, a fatty degeneration of the fibres with their interspaces filled by fatty globules has been peculiar to their paralytic condition, while another granular change, reducing the fibres to their myolemma, seems to be present in the contracted muscles. Muscular degeneration in paralysis coexists with more or less impaired nutrition of the ganglionic system and structural changes consequent thereon. Repeated microscopical examinations of my own, as well as those of others, lead me to this belief. As long as the ganglion remains uninjured, and the nutrition continues normally in the peripheral nerve, the muscles escape atrophy. For this reason it is so doubtful that atrophy occurs from purely cerebral disease, as advanced by Drs. Mitchell, Moorehouse and Keen in the work above alluded to. The obstinacy of infantile paralysis, in my opinion, depends principally on the rapid degeneration of the ganglia, which cannot recover their trophic power, and hence degeneration of the nerve and of the muscles and bones. However, I do not pretend to deny by this statement the occurrence of muscular atrophy without original lesion of the nervous system.

The absence of rigor mortis, which I have remarked in Cases ii. and iii., has also been noticed by Charcot, and, as discovered by Brown-Séquard,[1] is one of the sequelæ after paralysis of the sympathetic. As far as I have ascertained, the fact has not been pointed out by any other author but Charcot.[2]

These researches do not certainly include post mortem

[1] Physiology and Pathology of the Central Nervous System, Phil., 1860.

[2] Comptes Rendus de la Société de Biologie, 1863, Série 3ème, Tome v., p. 192.

examinations of every variety of reflex paralysis. They, however, make reference to cases which have been hitherto considered as typical. Concerning the alterations which I have noted on the sympathetic system, I abstain from venturing any absolute opinion on their bearing, until I have had greater opportunities of comparing these facts with the results of researches which I have already undertaken on the pathological anatomy of the ganglionic system. No doubt that with searching eye the microscope will continue to map out more accurately the morbid alterations of the nervous system in reflex paralysis. Unless a more than heretofore careful registration of a greater number of cases should prove that the cadaveric lesions here described were exceptional, the fact of peripheral and central nervous alterations peculiar to reflex paralysis will remain unquestioned, making the theory of disease without any departure whatever from the normal structure of anatomical elements still more untenable.

Delivery of the Headless Trunk of an Emphysematous Child. By T. Gaillard Thomas, M.D., Professor of Obstetrics and Diseases of Women, College of Physicians and Surgeons, New York.

[Read before the New York Obstetrical Society, Feb. 20th, 1866.]

At three o'clock in the night of February 18th I received a note, requesting a consultation in the case of Mrs. C., as early as possible in the morning. At eight A.M. I met Doctors Cone and Sawyer, who gave me the following history: Dr. Cone was called to the patient, a very robust Irish woman, on Thursday, the 15th, and found her in labor, the vertex presenting. The parturient process continued with violence, though without other result than forcing the head well down into the pelvis, till Sunday evening, when evidences of suffering on the part of the woman caused him to call Dr. Sawyer in consultation. By this gentleman forceps were applied, but as it was found that no amount of force caused any advance of the head, they were removed, and the head perforated. Traction being exerted on it by means of the crotchet, the bones yielded, and the whole head was removed, without being followed into the pelvis by the thorax, which now rested upon the brim. No efforts could force the chest to enter the pelvis, and the patient being quieted by a full dose of opium was left till my visit at eight.

At this time the state of affairs was as follows: Patient restless and moaning; voice husky; dark circles around eyes; pulse 140 to 150, quick and irritable. Physical examination showed vulva intensely swollen, and very dry and hot. The index finger introduced into the vagina discovered the headless thorax at the superior strait, not impacted. The abdomen of patient was much enlarged, as I supposed, from tympanitis. The odor pervading the chamber, and attaching to the fingers used in examination, was fetid beyond description. As the patient had had sufficient time to rally since last operative procedure, and as further delay seemed dangerous, immediate interference was determined upon. The bladder being emptied by the catheter, and the patient brought under the influence of chloroform, I seized the portion of the trunk which could be reached with the cranioclast and made traction, but the tissues were so putrid that they yielded at once, and no advance was accomplished. I now passed one hand as far up the pelvis as possible, and, by pushing up the presenting part, discovered that the body of the child was much enlarged by putrefactive emphysema of its tissues, and that no amount of traction could possibly result in aught but danger to the woman. Before removing the hand, I succeeded in bringing down one arm, which, being drawn upon, at once left the body at the shoulder joint. The other was then brought down by the other hand, and, like the first, it was separated from the trunk by slight traction. I then tried the crotchet, but accomplishing little by it, I introduced, as high up above the superior strait as possible, my extracting forceps (a representation of which is given in the American edition of Tyler Smith's Lectures on Obstetrics), and by them succeeded in advancing the thorax so as to make it engage in the upper part of the pelvis.

Introducing into the thorax a pair of long scissors, I now broke up its contents as completely as possible, and by further traction by the crotchet got this part fully into the pelvis. The next step was to pass the scissors through the diaphragm, and let out a collection of gas from the abdominal cavity. This so diminished the bulk of the inflated trunk, that, without further difficulty, it was delivered.

Upon examination as to the cause of the death of the fœtus, which had evidently occurred a considerable time before labor, if its excessively putrid state could be regarded as a guide, a hard, firm, single knot was found in the cord, which, to all appearances, had cut off its circulation, and produced all the subsequent series of evils. The pelvis appeared perfectly normal.

Twelve hours after the operation the patient was reported as doing tolerably well, having rallied after the removal of the body, and sleeping quietly and soundly. Upon awaking from this sleep, however, all the worst signs of exhaustion showed themselves, and in forty-eight hours she sank into coma and died.

The pathological cause which resulted so disastrously for both mother and child in this case was, I think, unquestionably, the occurrence of the knot tied in the cord by some movement by the fœtus. This occurring some time prior to delivery, caused death, by interference with the circulation through the cord. Putrefactive emphysema followed, which, of course, produced great disproportion between the body and head, enlarging the first much more than the second. This permitted the passage of the head into the pelvis, but prevented its delivery by forceps, from the impossibility of the trunk passing the superior strait.

Single and double knots in the funis, produced at the moment that the child is passing out of the uterus, are often met with. It must not be supposed that the one existing here was of that character, for there could be no doubt of its being older and more significant in its results; so hard and firm was it that it could not be untied, and while the whole cord was dark from putrefaction, this spot, and an inch on each side of it was black and almost completely gangrenous.

On Cholera: An Account of its History, Etiology, Pathology, Prophylaxis and Treatment. Prepared by Dr. C. C. Terry, M.D., New York.

History.

The literature of cholera is extensive, scattered through several centuries and many languages.

Drasche gives a list of about a hundred and fifty writers, mostly German, Hirsch quotes others in English and French, and all agree that the wide and devastating spread of the disease has produced no inconsiderable amount of medical history in Oriental and Occidental nations. The Chinese, Hindoo, Sanscrit and Arabian records may have mostly disappeared or become inaccessible, but there is no doubt of their former existence.

The use of the term "cholera" to designate a disease characterized by a profuse discharge *per os et anum*, diminution or complete suppression of the pulse, coldness and cyanosis of the surface, anuria and phenomena originating in disturbance of the nervous system, extends back to quite early times, and is probably derived from the Greek.

If Hippocrates believed the disease to depend upon a vitiated condition of the bile, it is easy to see the Greek derivation of the term employed in the part of his works which was written after his death; while Galen derived it from the Greek word for "intestines," because he thought the disease depended primarily upon an affection of the intestines. Aretæus of Cappadocia furnishes evidence that the disease was known in his time. He mentions the discharges, the cold extremities, lack of pulse, loss of speech and anuria.

Celsus omits the rice-water discharges and the suppression of the pulse. Hesychius, and Alexander of Tralles, used the term as derived from the Greek for "gutter," on account of the copious and continuous discharge, like water pouring through a gutter, and Alexander speaks of its rapid fatality, as well as of the secondary fever in cases of longer duration. It is also to be noticed that the Greeks generally used the term in connection with another word whose sense was "disease," as the Latins add the term "morbus."

The Arabians and middle-age physicians made use of this term to denote a disease characterized by the aforementioned phenomena; but while there is so much evidence of the existence of cholera as a distinct disease of a terrible nature and widely disseminated, we look in vain for a general epidemic down to a comparatively recent date.

Bontius, in 1642, described a disease apparently peculiar to Java, which has some resemblance to the pure type of cholera, but more to the tropical diarrhœa; and Jürgen Andersen spoke of cholera in Java and Sumatra, between 1644 and 1650, under the name of "white diarrhœa."

Dellon and Thevenot speak of cholera as it occurred on the peninsula of the Ganges and other parts of the East Indies in the last half of the seventeenth century, and Sydenham saw an epidemic disease resembling cholera, in London, about 1669 to 1676. But, as Hirsch remarks, the wide-spread localities without a true epidemic connection, the comparatively subordinate rôle the disease played in mortality statistics, and other etiological differences to be hereafter mentioned, draw such a broad and often distinct dissimilarity between the recent and the older appearances of the disease, as to give some plausibility to a *specific* difference and a division into "cholera nostras" and "cholera Asiatica" (or better, "Indian cholera"). In the accounts of the older physicians we do not find a clear distinction between the two forms of the disease, but in the last century physicians began to speak of points of similarity and dissimilarity between the cholera which seemed peculiar to the places where it appeared (cholera nostras) and the cholera which might be said to invade foreign territory as a spreading epidemic (cholera Asiatica or Indian cholera)—the cholera which remained at home, and the cholera which extended abroad.

Perhaps the earliest account of Indian cholera in its native territory is the description which Sonnerat gives of the epidemic appearance of cholera in the neighborhood of Pondicherry (1768–1771), which destroyed 60,000 people.

In 1781 the disease attacked the French army with great severity. In 1780 Folly reports it at Tranquebar, and in 1782 König calls it a "morbus periculocissimus."

There are accounts of the appearance of cholera at Madras in 1774, 1781, 1782, in the vale of Ambore in 1769 and 1783, while it was reported to have appeared in the district of Arcot in 1756, 1770, 1781, 1783 and 1787.

Meanwhile it appeared at Gandjum in 1781, and then at Cireas in 1790. At all these places, as the writers declare, it raged with much violence among both natives and foreigners.

At Hurdwar, a much frequented resort of the religious, it appeared in April, 1783, and in the course of eight days carried off 20,000 people. Add to these dates the appearance of an epidemic in Purneah in 1816, and the reliable record of the disease in India is brought down to the memorable outbreak of 1817.

If these data be examined with the closeness which existing accounts allow, it seems improbable that Orton can be correct in fixing the *focus* of cholera in the lower districts of Bengal, Travancore and the humid regions of Malwa.

It is difficult to fix the point at which the epidemic of 1817 commenced, but the general opinion seems to be that it appeared first at Jessore, in August, 1817; nevertheless, it appeared in so many places at about the same time, and with such similarity of phenomena, that this current opinion may not be beyond question, although the general tendency of the epidemic to spread by the way of the northwestern provinces, and the extensive radiation in all directions from Jessore, drew the attention of the officials to that place, and it thus deserves prominent mention.

The fact, seemingly overlooked, that cholera had already appeared in the neighboring places, affords some explanation of its rapid and broad extent, which, in the space of about a month, covered one thousand square miles, from the northern part of the mountain districts to Balassore, and from Benares to the mouth of the Ganges.

In the early part of August it appeared at Calcutta, spreading along the banks of the Ganges, Jumna and Bramaputra. During this year (1817) it seemed confined to Bengal and its neighborhood; and when, in the following year, it began to spread further, it took, first, a southerly and westerly direction, then a northerly, to Tirhoot, and other mountainous districts, where it reached an elevation of 4,000 feet above the sea, and even higher.

In its southerly extent, along the eastern coast, it reached Madras in October, and Palamcottah in the following January (1819).

Proceeding westerly, it appeared at Gruduana early in 1818, at Nagpore in May, in the early part of this month at Jauluah, and soon after in many parts of Candia, whence it spread north and northwest to Guzerate and the neighboring districts, where it met another line of the cholera march, and passed southerly toward Bombay, where it appeared at the commencement of August; and from the Guzerate neighborhood it passed, at the same time, to the western parts of Madras, to Mysore, Hyderabad, Arcot, and other adjoining districts.

To complete the account it is necessary to mention that the disease spread from Allahabad in March, 1818, in two directions, the one southerly, to Bundelcund and Malwa, uniting with the above mentioned westerly line, the other passing northerly to Oude (at Lucknow in May), Delhi, Merut, and Punjaub.

Without attempting further details of the disease in India itself, it may be well to mention that, although the disease reappeared during the following years to 1824, then occasionally until the general outbreak of 1841–46, it has not again appeared with such severity or extent as in 1817 and the subsequent two years.

In 1818 the disease spread beyond the limits of India, passing to Ceylon in December, and overspreading the most of the island; thence an English frigate carried the disease to Mauritius and Isle of France in November, 1819, and in 1820 it extended from the Isle of France to the east coast of Africa (Zanguebar).

The peninsula of Malacca was attacked in May, 1819, and the epidemic passed into Burmah and Siam, and also to the Indian Archipelago in the following year.

The disease appeared here and there among the islands until 1830, and then, after an interval of twenty-three years, reappeared in Sumatra in 1853.

The cholera arrived among the Philippines by a ship from Madras, in 1820, and remained ten years, while it did not appear among the Molucca islands until 1823, according to Lesson.

According to Milne, the Chinese empire was attacked in 1820, the disease appearing at Canton, Kianghi, Ningpo (in May), and at Pekin in the summer of 1821. During 1821–2 it spread over most of the country. In 1827 it appeared on the Mongolian and Siberian coast, and in 1831 there was an outbreak in the coast cities of China. It reached Australia in 1832, but was limited to the neighborhood of the Swan river.

It is necessary to go back a few years, to trace the course of the disease toward Europe. In the spring of 1821 the disease appeared on the Arabian coast, at Muscat (perhaps brought from Bombay), and rapidly extended along the coast to Mesopotamia, and then, along the Euphrates, to Bassora. About the same time it appeared on the Persian coast (Bunderabbas and Buschir), and proceeded in two ways, northwest, along the coast, toward the Euphrates, and northerly, towards the interior. Caravans brought the disease to the walls of Ispahan (which was spared), to Jesd, and other places in the northern part of the country; but in these mountainous districts the disease appeared by only here and there a case.

From Bassora it passed through Mesopotamia, along the Tigris, to Bagdad, and along the Euphrates to Anna. From Bagdad it was carried by Persian troops to the northwestern part of Persia, in the fall of 1821.

During the cold season there was an intermission, but in the following year (1822) it reappeared, spreading from Mossul northerly to Kurdistan, and westerly to Mordin, Diabekir, Nursa, Bera and Syria, where it reached Aleppo in December; but it soon disappeared in this direction.

At the same time the disease reappeared in Persia, spreading northwesterly to Tauris (August, 1822), and thence to Ghilan and neighboring districts. Here, too, its duration was short.

But in the spring of 1823, and while reappearing in the districts just mentioned, it made its first appearance in Europe (the disease noticed by Sydenham being undoubtedly other than cholera), by extending from Persia, along the Caspian Sea, to Russia.

In 1827, the disease passed from Lahore, by caravans, to Kabul, Balkh and Bokharah; in the following year (1828) it spread from China to the Kirgis tribes, and by caravans to Orenburg (August, 1829).

Again, in 1829, it reappeared in Persia, in the fall, at Teheran, and in the next year traveled to Astrachan. Thence it spread along the Volga and the coasts of the Caspian Sea, to the mouth of the Ural, and then along the Caucasian line to the Cossacks.

By the end of 1831 a large part of Russia was overspread. Petersburg was attacked in June, 1831, and Oral and Archangel at about the same time.

During the same year the delta of the Nile was visited by a severe epidemic, which commenced at Cairo, and spread up to Thebes and down to Alexandria, being carried to Tunis by pilgrims.

From Russia the disease came into Germany by three ways. 1st. One route was through Poland, Posen, Bromberg, Schlesien, along the Oder to Mark and Pomerania, Hamburg, Holstein and Hanover, where Lüneburg was the only city visited. From Hamburg it was carried to Bremen, in October, 1834. The Rhine provinces suffered severely in 1832–3, the disease apparently coming to them by the way of Holland. In Hamburg the disease remained from 1831 to 1835.

2d. In May, 1831, ships brought the disease from Russia to Danzig, whence it spread to Königsberg, and westerly into Cöslin. At the same time it passed over the confines of East Prussia to Gumbinnen.

3d. It extended from Russia to Austria (1831), in Hungary in June, and soon it spread over the whole land.

The British Isles were reached in the fall of 1831. In October the disease appeared at Sunderland, brought thither by a ship from Hamburg. Newcastle and Gateshead were soon attacked, and the disease crossed the Scottish border, appearing on the Tyne (Haddington), in December. In January it appeared at Musselburgh, in February at Edinburgh, in

March at Glasgow. In the middle of March it reached Belfast, and at the end of the month appeared in Dublin.

At that time Graves remarked the preference which the disease showed for the highways of communication, and for the coast and banks of rivers, mountainous regions being singularly exempt from the disease.

In the meantime there was an epidemic in France. About the middle of March the disease appeared almost simultaneously at Calais and Paris, and from these points spread so rapidly that during April and May the greater part of northern France was attacked, and by the middle of June it had invaded most of the southern departments also.

Of the 86 departments of France, 51 were infected, the mountainous districts of the southern and eastern departments being the parts least attacked. In the spring of 1833 the disease reappeared in several of the northern and northeastern departments, but its spread was quite limited.

From France the disease crossed to Belgium in May, 1832, appearing first at Courtray, and thence spreading to Ghent and Brussels, appearing at Luxembourg at the commencement of July, at Antwerp by the middle of July, and before the first of August had spread over the greater part of the country.

About the middle of July, 1832, the disease appeared at the Hague and Rotterdam; but from what point the disease was brought to Holland is not quite clear, since there was a simultaneous epidemic in France, Belgium and the British coast.

North Holland (especially Amsterdam), North Brabant, South Holland (especially the Hague), Friesland, Groningen, and Dreuthe were visited by the disease, but its spread was quite limited.

Denmark remained free from the disease, but a few local epidemics occurred in Norway in the fall of 1832, and again in 1833. In August, 1834, Norway suffered more severely, and in the same year Sweden was visited.

Before the disease reached Southwestern Europe it appeared in the western hemisphere, brought to Canada by Irish emigrants, in June, 1832. Thence the disease spread along the St. Lawrence and its tributaries, along the banks of Lake

Ontario, spreading over the two Canadas. From Canada the disease was brought to Detroit.

At about the same time the disease was brought to New York directly from Europe by emigrants.

In July it was at Philadelphia; in August it spread through Maryland, and by the first of September had appeared in Kentucky.

Thence it spread along the water-routes to Ohio, Indiana and Illinois; but it did not extend widely or attack the people violently.

In October, 1832, it appeared at New Orleans, rapidly spreading along the Mississippi to the adjoining States.

During the winter the disease seemed entirely absent, but in the following summer it reappeared with considerable severity in the Middle and Western States, extending through Indian Territory and beyond the Rocky Mountains to the coast of the Pacific.

The Eastern States were visised in 1834, and the disease passed thence to Nova Scotia.

It appeared in Mexico in the spring of 1833. In the same year the cholera visited the West India islands; Guiana, Brazil, and the Western States of South America were infected in 1835, and it is reported at Nicaragua in 1837.

We must now turn to Europe, and consider the disease as it appeared in the southwestern countries.

In January, 1833, an English ship brought the disease into the Duero river, and the first places attacked in Portugal were Fort St. Isao de Foz and Oporto. Cholera appeared soon after at Coimbra and Galicia; in February at Aveiro, and at the commencement of April in Lisbon.

The disease appeared in Spain in August, 1833, spreading over Andalusia, Estremadura, Sevilla, and a few points in Southwestern Spain; Cadiz, Malaga and Madrid were atacked.

In the following year (1834) the northern and eastern parts of Spain became the focus of a new epidemic, which spread over a large part of Europe.

December, 1834, the disease was carried from Catalonia to Marseilles. It spread over several neighboring districts, but mostly disappeared until March, 1835, when it took a fresh start, passing through the southern part of France, and reaching Piedmont in the summer.

Thence it passed, in two directions, from Nizza to Tuscany, along the Ligurian coast and over the Maritime Alps to the upper regions of the Po.

Lombardy was visited this year, and Venice the next (1836); in November Padua, Vicenza and Verona.

In March, 1836, the disease appeared after the winter repose, attacked most of the places where it was the former year, and so on spread over Italy.

It was at Naples in October, and at Sicily in the following January, 1837.

It appeared in Switzerland in July, 1836, but was confined to the districts of Mendrisia and Lugano.

From Venetia it passed over the southern boundaries of Austria and spread again over Germany.

From Roveredo it appeared in German Tyrol.

Trieste was attacked in March, 1837, and the disease now spread along the principal lines of communications about Vienna, appearing in the city in April, spreading to Hungary (where it was quite limited), and thence to Galicia.

In August it was carried from Tyrol to Bavaria; in October it appeared at Munich, but disappeared with the commencement of December.

From Galicia it extended through Poland to West Prussia, on the one hand, and to Schlesien on the other, so at the end of June the disease was in the district of Marienwerder, in July at Danzig, end of July at Breslau, commencement of August at Königsberg, middle of August at Gumbinnen, and a little later at Berlin. Later in the fall the disease disappeared in these regions.

In 1835 the disease reappeared on the Arabian coast, was carried thence to the east coast of Africa, extended to Egypt (where it remained two years), thence south to Aubia, Senna, Cordofan and Darfur, west to Tunis, Tripoli (and perhaps to Algiers), to Abyssinia; but Combes and Tarnasier think it came to Abyssinia from the Galla countries.

With the close of the year 1837 commenced a short interval of repose before the next general epidemic.

[To be continued.]

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Contributions to Bone and Nerve Surgery. By J. C. Nott, M.D., Professor of Surgery in Mobile Medical College. Philadelphia: Lippincott & Co., 1866, 12mo, pp. 96.

Dr. Nott tells us that "this little volume is intended simply as a contribution to a department of surgery which has been strangely neglected, viz., the sequelæ of gunshot and other injuries of bones." He thinks, while "the ground of what may be called primary and secondary surgery has been well covered by writers on military surgery" (in the enumeration of whom he strangely omits all American names, even that of Dr. Chisholm, of Charleston, S. C., the author of one of the best manuals on military surgery yet published in the English language), there is a remarkable want of medical literature of those chronic injuries of which he is about to speak; that for the treatment of gunshot injuries of bones, "our army surgeons, as a class, possess but meagre attainments to meet the demands made upon them, and are left to grope their way in the dark; and that bone surgery and bone pathology are but in their infancy." To these sweeping assertions we cannot give our assent, believing them to be gratuitous and unfounded. Other minds have been directed to the investigation of this class of injuries, at home and abroad, as the surgical literature of both Europe and the United States will show, particularly during the past decennial period; and old wounds, yet suppurating or fistulous, with engorgement or ulceration of the soft parts, abscesses adjacent to or symptomatic of different alterations of bones, caries, necrosis, osteomyelitis, etc., the results of gunshot injuries, have been intelligently and fully treated of by men of large experience in these countries. We doubt not that Dr. Nott is satisfied with having performed a duty "in blazing out a few prominent landmarks in the wilderness, to assist the explorer in finding his way:" we can only regret that there is not more novelty and instruction in his teachings. He has added nothing to what Dupuytren (*Traité des Blessures par Armes à feu*), and others,[1] have taught about this class of affections, and with which surgeons are, or ought to be, familiar.

While we do not think, with Dr. Nott, that it is "so absolutely necessary that the whole subject should be worked over," there are,

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[1] Compte rendu de la Clinique Chirurgicale de M. H. Larrey, par M le Docteur Gaujot, Moniteur des Hôpitaux, 1857, '58, '59.

undoubtedly, certain affections of the bones which have been unaccountably and persistently slurred over by systematic writers both on civil and military surgery, in spite of the attention they have received from special students. Of one of the most important lesions of bone, so frequently met with after gunshot injuries, and, as we believe, of constant occurrence in civil practice—osteomyelitis, both in the acute and chronic form—our author has very little to say. Indeed, he feels "assured that it has been much less frequent in our American war than it is said to be in Europe. . . . These cases occur occasionally, but by no means bear a large proportion to external periostitis and exfoliation" (p. 79). Unhappily, our own experience is directly the reverse, and it agrees, we think, with that of all army and civil surgeons who have had the opportunity of investigating the subject. We venture to assert that, if properly looked for, disease of the medullary substance of the stump bone will be found in nearly every fatal amputation of the long bones, in civil as well as in military practice.

Dr. Henry Gibbons, Jr., states, in a valuable paper (an abstract of which was published in the Quarterly Report on Surgery, in the last number of THE JOURNAL), his experience during a two years' residence in the Douglas Hospital, Washington, to be, that "osteomyelitis occurred, to a greater or less extent, in a large majority, if not all of our amputations." It happens, too, from indirect as well as direct causes, and is a constant result of severe contusion of bone, and is the chief reason why, as Dr. Nott tells us his experience leads him, and very justly, to believe, "contusion [of bone] is quite as bad, or even worse than gunshot fracture." "In these cases of contusion," he says, "it not *unfrequently* happens that the concussion is communicated to the medulla in the long bones; it is torn, its blood vessels ruptured, blood is extravasated, and destructive inflammation may be set up, followed by internal necrosis" (p. 68).[1]

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[1] Dr. Nott not only speaks of "the medullary membrane, internal periosteum or endosteum" (p. 14), but describes it minutely. Mr. Longmore, too, mentions the "endosteal investment," and refers to the "difference between the inflammation of the endosteum and that of the periosteum." And one of the written questions on Military Surgery at the Netley Examination, February, 1864, was: "Give a description of the nature and consequences of endostitic inflammation, or osteomyelitis." We had thought that the thorough investigations of Robin, and Ollier, of Lyons (Gaz. Hebdom., Nos. 6, 8, 10, 13, 1865), had satisfactorily proved the non-existence of the endosteum as a proper membrane. We observe that Mr. Holden, in the last edition of his "Human Osteology," still describes the endosteum, though he acknowledges

That osteomyelitis is the legitimate consequence of contusion is satisfactorily shown by Dr. Gibbons in the paper referred to, as well as by Dr. J. Lidell, in his instructive and able essay on "Contusion and Contused Wounds of Bone" (Am. Jour. Med. Scien., July, 1865); and Klose, Buntzen, Studsgaard, of Copenhagen, Chassaignac, Tharsile Vallette, Jobert,[1] and Mr. Longmore,[2] agree in so regarding it.

Frequent, then, as we assume this affection to be, and abundant as its literature is, it is remarkable that it has met with so little attention from systematic writers on surgery. Indeed, the remark made by the author of the first elaborate memoir on the subject, published thirty-five years ago, almost holds good to-day. "It is surprising," he observes, "that while pathological anatomy has been, for so many years, zealously and minutely cultivated, particularly in the Paris school, that an anatomical fact so patent as the complete alteration of the medulla of the portion of bone left after amputation, should have escaped the attention of those who every day made dissections of the stumps of such as have died after the operation. That it is so, any one may satisfy himself who will read the most recent works on this subject."[3]

It is true that Duverney (1700), Weidman[4] (1743), Ravaton[5]

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that it cannot be isolated and detached as a membrane, except in shreds. See, also, on this subject, Dubuisson Christot's Récherches Anat. et Phys. sur la Möelle de Os Longs, Paris, 1865.

[1] Contusion des Os. L'Union Méd., Nos. 17 and 22, 1865.

[2] There are two specimens of chronic osteomyelitis in the Netley collection, following contusion of bone. One resulted from the kick of a horse upon the arm; in the other, a musket-ball penetrated only the soft tissues, and struck the bone, without denting, grooving or fracturing it.

A case of osteomyelitis diffusa (Chassaignac) has lately come to our knowledge, where the subject, a child, fell on the ice, striking the tibia. Very little pain was felt at the time. Soon afterward the symptoms of osteomyelitis were developed, with abscess opening externally. Amputation in the contiguity was performed, and the bone, on being sawn through, exhibited the lesion in its several stages, with epiphyseal separation.

Spontaneous and traumatic diffuse osteomyelitis have been fully and ably treated of by Dr. C. Studsgaard, of Copenhagen (1863), who, besides furnishing a full bibliography and analysis of the views of the several authors who have written on the subject—Stanley, Porter, Boyer, Cruveilhier, Chassaignac, Demme, Gerdy, Klose, Gosselin, etc.—gives the result of a large personal experience.

[3] De l'Inflammation du Tissu Médullaire des Os Longs. Par M. Reynaud, D.M. Archives Générales de Médecine, 1ère ser., t. xxvi., 1831, p. 161.

[4] De Necrosi Ossium. 1743.

[5] Chirurgie d'Armée. 1768.

(1768), Percy[1] (1792), Cruveilhier (1816), Ribes (1819), Blandin (Dict. des Sciences Méd.), and Desruelles, had previously recognized the fact of the occasional presence of pus in the medullary canal of the long bones, but they did not extend their observations, or attempt to fix its causation, or elucidate its pathogeny; and this, probably, from the same cause that osteomyelitis has been so little noticed by civil surgeons in this country and Europe, who have been contented with denying its frequency—that while the stump and stump-bone externally are examined, it is not common to make a longitudinal section of the latter.

M. Reynaud, who, to quote his own words, "had seen every case of amputation of the thigh done at the Charité Hospital, during a period of two years, die, without exception, and having nearly always found, in the interior of the bone, very severe lesions"—never failing to make a longitudinal section of every stump-bone he examined—felt that here was an important fact that heretofore had not received the attention from pathologists it merited. We extract from the thirty-third proposition of his Inaugural Thesis, presented to the Faculty of Medicine of Paris, July, 1829, these sentences: "In the long bones, in those in which the medulla is largely developed, inflammation of this tissue is frequently noticed. In the acute state it promptly ends in gangrene, and nearly always exercises a very marked influence on the bone itself, and the surrounding parts; and hence, one of the worst accidents which may follow amputation of the thigh, is inflammation of the medullary tissue of the femur, which, extending upwards in a greater or less degree, promptly causes mortification of the bone, the nearly certain denudation of the external periosteum, and the formation in its substance of large purulent collections." This concise and graphic description has hardly been improved on by the many writers who have succeeded Reynaud.

Our readers are aware that a few years ago, after the Crimean and Italian wars, osteomyelitis following gunshot injuries excited the interest of surgeons in Europe, and was the subject of several papers in the foreign periodicals, and many very lively discussions at the Imperial Academy of Medicine, in 1860,[2] on the occasion of the reading of the memoir of M. Jules Roux,[3] surgeon of the naval hospital of St. Mandrier, at Toulon, where over two thousand of the wounded of the Italian campaign—many of them with diseased bones—were treated.

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[1] Manuel du Chirurgien d'Armée, 1792.

[2] Bulletin de l'Academie Impériale de Médicine, Vol. xxv., 1860.

[3] Mém. de l'Acad. Imp. de Méd., t. xxvi.

M. Roux's proposition was, that when chronic osteomyelitis consecutive to gunshot injuries existed after six months, or even up to a year, and the indispensable necessity of an operation was recognized, exarticulation of the affected bone was, in a large majority of cases, if not in all, the only safe practice, to the exclusion of resection or amputation in the continuity. Dr. Tharsile Vallette, who was in charge of a Base hospital at Constantinople, had, previously (1855), from his observations in the Crimea, come to the same conclusions both in the acute and chronic form.[1]

It is not our intention, at this time, to enter into the merits of the question, but simply to ask the attention of surgeons, both military and civil, to the frequency and importance of this affection in connection with injuries of the bones, after contusion, gunshot wounds, and amputations, and to introduce some very sensible practical remarks, recently made by Mr. Thomas Longmore,[2] the able Professor of Military Surgery in the British Army Medical School at Netley. During the protracted debate on M. Roux's paper in the Paris Academy of Medicine, Baron Hyppolite Larrey, Surgeon-in-Chief of the Army of Italy, very elaborately examined the views held by M. Roux, and came to the conclusion that: (1) While osteomyelitis after gunshot wounds is more frequent than has hitherto been supposed—being sometimes limited to a given point of the bone, extending only partially, or, more or less quickly, involving the whole canal—it must be recollected that it is not inevitable, is often a means of cure, and is, in itself, susceptible of spontaneous cure, and therefore, in the first instance every rational mode of treatment should be attempted; that, (2) it sometimes necessitates resection, sometimes consecutive amputation, and, in certain cases, exarticulation is required; that, (3) while its existence explains the want of success following amputations in the continuity, it does not justify the two exclusive propositions in surgery, that resections of joints and amputations in the shafts of bones are to be abandoned for exarticulation in all such cases. Mr. Longmore believes that whilst most British army surgeons will agree generally with the views of Baron Larrey, "the proper treatment of chronic osteomyelitis may be carried a step further in precision, especially in cases where

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[1] Mém. de Méd. Militaire, 2ème serie, t. xvi., 1855.

[2] Remarks on Osteomyelitis consequent on Gunshot Wounds of Upper and Lower Extremities, and especially upon the Treatment of Stumps affected with Osteomyelitis after Amputation necessitated by such Injuries. By Thomas Longmore. Transactions Royal Medico-Chirurgical Society, Vol. xlviii. 1865.

want of success has seemingly followed partial operations on account of its presence. In these cases, M. Jules Roux and others hold that amputation in the contiguity is the only operation which will save life, and Baron Larrey believes, under some circumstances, this course justifiable. Mr. Longmore adopts a different conclusion, and the grounds which have led him to it are based, firstly, upon certain preparations in the Army Medical Museum at Netley, from cases in which exarticulation had been performed, or death had happened, from osteomyelitis; and, secondly, on the histories of some similar cases in which there was a cure without exarticulation. All the preparations showed that in each case extensive necrosis of the shaft had resulted from the osteomyelitic inflammation; that the necrosed portions were well defined within fixed limits; that in no instance was the necrosis continued to the apophyses, although in all cases the apophyses were more or less affected with osteoporosis; and that the sequestrated portions of the shafts were surrounded by copious shells of new bone, as in cases of ordinary necrosis. Three cases are related of osteomyelitis consecutive to amputation of the thigh in the middle third—two for gunshot wounds, and one for compound fracture from a fall—in which the sequestra were removed, and sound stumps resulted. In the first case, the patient admitted into the hospital from India, was suffering from the effects of prolonged irritation, and the thigh stump was so extensively diseased that it was determined, on consultation, that hip joint exarticulation gave the patient his only chance. A study of the preparations alluded to above led Mr. Longmore, as a preliminary measure, to open freely the cicatrix of the amputation wound, and remove all pieces of necrosed bone that might be found within the remaining portion of the shaft. Complete success attended the first effort; the dead portion of the shaft, which reached to the trochanters, was extracted, together with some smaller detached fragments. Rapid recovery followed, and the patient eventually walked from the hospital with an artificial limb applied to a sound stump. In the other cases the necrosed portions of the shafts were removed by gradual traction through openings in the line of cicatrix of the amputation wound. Mr. Longmore's conviction is that if this practice is generally adopted, life and limb will often be saved. An osteoporotic condition of the articulating epiphyses will not interfere with a successful result, if the necrosed sequestra be completely removed. In this connection Mr. Longmore alludes to a case in which he had amputated at the ankle joint, and found, on sawing through the malleoli, the extremities of both the tibia and fibula extensively affected with osteoporosis; yet the ends of these bones became firm and solidified under an improved condition of the general health. We have seen the same thing in a case of compound gunshot fracture of the thigh, in which there was imperfect consolidation, with overlapping of the upper fragment, which projected somewhat and was partially necrosed. During the operation for the removal of the overlap, the bone was again fractured. Under the use of stimulants and generous diet, and pure air, there was perfect consolidation subsequently, with a shortened but good limb. We know, too, of a case of simple ununited fracture of the thigh in an aged female, where the surgeon, having decided to ligature the ends of the fractured bone, cut down upon them, and while drilling his hole for the wire in one of the fragments, finding it in a state of osteoporosis and giving away, immediately, with the idea that he had an irremediably unsound bone to deal with, resorted to amputation, and lost his patient.[1]

In chronic osteomyelitis, or that condition of the medullary tissue of bone, analogous to protracted and degraded suppuration in the soft parts, extending itself along the cancellated structure, and causing disintegration and death of the bone structure, we are inclined to the more conservative course of Baron Larrey and Mr. Longmore, and believe that exarticulation of the diseased stump should not be resorted to until after the thorough removal of all dead bone, and the effect ascertained. Very often, the complete extraction of the endostitic sequestra—though the articular extremities of the bone may be affected with osteporosis—will be followed by a cessation of all constitutional irritative disorder, and a sound, useful stump be obtained.

In acute osteomyelitis, following direct or indirect injury to the bone, whether from contusion or after amputation, we hold with Professor Fayrer [2] and Tharsile Vallette, that in a large majority of cases, as soon as the incipient symptoms of systemic poisoning are detected, and the affection of the bone made out, exarticulation substitutes a fair chance of life for a certainty of death. It must be borne in mind that no condition is so certain to be followed by pyæmia as osteomyelitis; that the advent of the septicæmic phenomena are very

[1] For some excellent remarks on osteoporosis, see the essay of Mr. A. E. Durham on Certain Morbid Conditions of the Bones, in Guy's Hospital Reports, 3d series, Vol. x., 1864.

[2] On Osteomyelitis, by Professor Fayrer. Indian Annals, Jan., 1865. Brit. and For. Med. Chir. Rev., Oct., 1865. Acute Osteomyelitis treated by Incision and Amputation at Shoulder Joint. Verneuil, Gaz. des Hôp., 1863. W. Proser, Archiv. der Heilkunder., 1863.

insidious; and that promptitude in action, on the part of the surgeon, is obligatory. The sudden acceleration of the pulse, increase in the number of the respirations, and, above all, rise in the temperature of the body—which, after every capital operation, should be carefully noted, at least twice in the twenty-four hours, morning and evening—give notice both of the approach of the constitutional affection and the presence of the local disease.

Professor Fayrer proposes, as a method to satisfactorily arrive at a knowledge of the condition of the bone, to pass a long probe down the medulla, and if it impinge on bleeding and healthy medulla near the end of the stump, you may, if the constitutional symptoms permit, wait and see if nature will limit the morbid action. He adds, however, "Such expectations are, in my experience, rarely realized, and the doubt is generally resolved—not in favor of the bone." We have no personal experience with the practice, and should place but little reliance upon it. We are satisfied that, besides good diet and pure air, nothing contributes more to diminish the chances of osteomyelitis after amputation than simple dressings—dry or moist—and the absence of all means of constriction, by which purulent matters are retained in the stump.

Dr. Nott, following Stanley, and, perhaps, the majority of surgeons, is of opinion that "when the sequestrum of bone *has* become loose, and not before, it is the duty of the surgeon to remove it promptly;" but, "until the process of separation is completed, it is the part of the surgeon to watch patiently;" and that "the attempt to remove the sequestrum *before it is loose*" is a great error of practice. We are certainly not disposed to counsel undue haste in meddling with sequestra, but we are satisfied that surgical interference is too frequently unnecessarily deferred, until the new bone becomes so thick and dense as to make it difficult to reach and separate the dead bone, making the operation one of great labor and fatigue to the surgeon. The soft, lead-like layer of newly-deposited bone is usually easily cut through, and the dead fragment readily extracted. In support of these views, which we have put in practice for some time, we will quote some remarks lately made by Sir William Fergusson, at King's College Hospital.[1] He observed: "Formerly it was thought discreditable for the surgeon to operate and find no dead bone, but he thought it wise sometimes for the surgeon, who knows that dead bone may be expected, to make preparations for it." In the first case on which he then operated (the removal of three inches of sequestrum from the shaft of the humerus),

[1] London Lancet, Feb. 17, 1866.

Sir William remarked: "Even if the piece had not been loose, the procedure he had adopted (cutting through the soft bone) would have facilitated a later operation. Such a piece, so situated, would never have been thrown off spontaneously, and if delay had taken place, the new bone would have become so hard and dense as to be almost impossible to cut through." He added: "The specimens of necrosis which abounded in museums have been, for the most part, taken from limbs amputated from this cause. In many of them surgical interference at an early stage would have rendered such a procedure unnecessary." The time of separation of sequestra is very uncertain and variable, occurring sometimes within a few weeks, and, again, not in years. The completeness of the new osteogenic process must, in a degree, be our guide to a sound practice.

Though the question whether dead bone can be absorbed is not yet entirely determined, and the possibility of such an occurrence therefore cannot be positively denied, it should not practically influence the surgeon. The experiments of Mr. Savory (Med.-Chir. Trans., Vol. xlvii., 1865) show very conclusively why we should never look for it in the case of sequestra—the absorption of dead bone, when in contact with living bone, being determined by the amount of pressure to which it is subjected.

The Contributions to Nerve Surgery consist of two cases, which Dr. Nott considers to be of "unusual interest, both from their novelty and practical bearings," and as "probably unique," which, we assure him, they are not. The first is that of a man whose leg, crushed by a railway accident, August 1st, 1862, was amputated about the junction of the lower and the middle third. The operation was not well done, the bone being left exposed from insufficiency of flap. Suffering intensely from neuralgia of the stump, it was again amputated, September 11th, 1863. No relief following, a third amputation was submitted to on the 19th of May, 1864. The "portions of two large nerves removed were found enlarged and engorged." No relief was had from this operation.

"On the first of June following, the pain being still referred to the stump, I cut down, at the upper part of the popliteal space, exposed the ischiatic nerve, and took out about an inch of the trunk and a portion of the popliteal and peroneal nerves, altogether about three inches in length. The nerves were all enlarged, and, no relief following, he returned home in despair" (p. 92).

In May, 1865, nearly twelve months after the last operation, the suffering continuing, and referred to the end of the stump, Dr. Nott "cut down upon the popliteal space, and dissected out the two large nerve trunks completely down to the extremity of the stump." Still no relief. Amputation of the thigh was next proposed; "discouraging as the prospect was," this was done, May 27th, 1865, by Teale's method, and the ischiatic nerve was dissected up "about three inches above the sawn extremity of the bone." It was found "engorged, and double its normal size." The result was not more happy; and the man calling for relief at any hazard, as a last resort, "excision of the ischiatic nerve, at its point of issue from the pelvis," was performed, August 28th, 1865. For the first time in these various operations, a part of the main trunk of the nerve, which appeared to be sound, was reached. The piece removed was an inch and a quarter long, and "the upper half looked perfectly healthy in size, color and texture, while the lower half was enlarged and engorged with blood." The patient "expressed himself as greatly relieved, for the first time," but the following day he "was suffering as much as ever, and still referring the pain, as he had done after every operation, to the extremity of the existing stump." Though he persisted in asserting that no relief was experienced from the last operation, Dr. Nott is satisfied "that he was much benefited by it," his general health being improved.

We agree with the author, that "this case is certainly one of the most remarkable on record in several points of view," and hardly know which to be the most surprised at—the confidence and endurance of the patient, or the perseverance, not to say recklessness, of the surgeon. It is, fortunately, not common "to see inflammation follow up the trunk of a nerve, as it did in this case."[1] The inutility of the practice both of reamputation and excision in such cases was long ago proved. It was, thirty years since, quite common in the London hospitals, but has been abandoned there, and, we had hoped, everywhere. Two very interesting and conclusive cases of this kind

[1] Dr. L. Dumenil, Surgeon-in-Chief of the Hôtel-Dieu at Rouen, has recently related a very remarkable case of ascending neuritis from local injury, viz.: contusion of the sciatic nerve, caused by a four-hours' drive in a jolting vehicle while sitting, during the whole time, on one buttock, which was, in consequence, subjected to continuous pressure. The disease of the nerve-trunk extending to the spinal cord, asphyxia and death followed. At the autopsy all the evidences of the inflammatory nature of the nerve lesion were present—redness of the cellular sheath, thickening of the neurilemma, violet tint of the nerve, and development of capillary vessels, with granular walls and granular corpuscles (Gaz. Hebdomadaire de Méd. et de Chirurgie, Jan., 26, 1866).

are mentioned by the late Mr. Herbert Mayo (*Outlines of Human Pathology*, 1836), amongst many others that might be cited. (1.) A reamputation of a thigh for intolerable, diffused pain of the stump, the primary amputation having been for neuralgia of the knee joint, and in which care was taken to draw out and cut off a considerable portion of the sciatic nerve. The pain returning very soon, Sir Astley Cooper recommended the division of the sciatic nerve, where it is covered by the lower fibres of the gluteus maximus, and the removal of a piece. The patient afterwards suffered as acutely as ever. (2.) A case where Mr. Bransly Cooper had reamputated at the shoulder joint for a neuralgic arm-stump, consecutive to an amputation of the forearm, for the same cause, and which was followed by no relief. In the Journal de Médecine de Bordeaux, July, 1865, (*Gazette Médicale*, Paris, Jan., 1866), a similar case is thus summarised: "Successive resections of the sciatic, popliteal, external and great sciatic nerves, for neuralgia of the stump; cure; relapse."

Dr. G. A. Mursick's case (New York Med. Jour., Vol. ii., p. 174), where, after gunshot injury of the median and internal cutaneous nerves, followed by intense pain in the hand and fingers, in which subcutaneous injections of morphia, dissection of the nerves from the enveloping cicatrix, and excision of a portion of the nerves failed, amputation of the arm was done, and was apparently successful. The report was published too soon to establish the fact of cure. After excision of three-fourths of an inch of the nerves, the pain in the palm of the hand, thumb, index and middle fingers soon became as acute and constant as before. In the well known case of Azam, of Bordeaux (*Bulletin de la Société de Chirurgie de Paris*, Juillet, 1864), excision of the external peroneal nerve was performed for intense neuralgia of the stump, in an amputation done three months previously. No relief followed. Three months afterward, three centimetres of the sciatic nerve, just above the bifurcation, were removed. Complete analgesia and anæsthesia followed for forty-eight hours. Normal sensibility was gradually restored, all pain in the stump ceasing. Had the case now been published, it would have been counted one of splendid success; but seven months later, in trying to save himself from falling, the man was seized again with violent pains in the stump and convulsions, and at the time of the report, two years subsequent to the first operation, suffered almost as acutely as ever. At the same meeting M. Richet mentioned a case which exemplified what he believed—that excision of the nerve in this or any form of neuralgia was only a palliative procedure. Gherini, of Milan, who has published an elaborate memoir on the surgical treatment of neuralgia *(Annali Universali, April,* 1864*)*, after referring to many cases of excision of portions of various nerves, admits that the operation cannot be regarded as curative.

In three instances of gunshot injury to the median nerve in the arm, followed by intolerable algesia of the hand, in which excision of a portion of the nerve was performed, coming under our observation, no permanent relief followed. In such cases, we are satisfied that the best chance of cure is afforded by the use of hypodermic narcotic injections, to give instant relief, and to gain time for the use of such means as may modify the nutritive changes going on in the nerve fibres. In two cases in which we have followed this treatment, we have had reason to be satisfied. One, a gunshot injury of the ulnar nerve, and the other a painful arm-stump. In the former the relief was gradual, and, after thirteen months, promised to be complete and permanent. In the other, the pain paroxysms came on with great regularity every afternoon, and yielded to quinine, arsenic, and local narcotism. The patient was then lost sight of. We would strongly counsel a fair trial of these means, before resorting to operative interference, no matter how clamorous the patient may be for any mode of escape from present torture; strengthening our own resolves, and reassuring the sufferer with the comforting words recently spoken by a large and enlightened experience: "No class of cases with which we have been called to deal seemed to us, at one time, so sadly hopeless as injuries of nerves; none has better rewarded enduring and steady efforts to afford relief."[1]

The second nerve case Dr. Nott reports, mainly, on account of its physiological bearing. It was a "neuromatous, encysted tumor, of the size of a cocoa-nut, extending from an inch below the bend of the arm to within an inch of the wrist, into the upper part of which the trunk of the median nerve entered, "expanding its fibres over the whole anterior surface of the sac," and again collecting in a common trunk at the lower border of the tumor. Before dissecting out the mass, the nerve was divided above and below. "Although at least five inches of the median nerve were removed, its functions were not interfered with in the slightest degree," and neuralgia, which had occurred some months before, ceasing, "all the functions of the fingers were perfect." The tumor had been growing slowly for fifteen years.

[1] Gunshot Wounds and other Injuries of Nerves. By S. Weir Mitchell, M.D., George R. Morehouse, M.D., and William W. Keen, M.D., Philadelphia, 1864.

Dr. R. W. Smith, of Dublin (Pathology, Diagnosis and Treatment of Neuroma, 1849), says: "Experience has further established that neither sensibility nor the power of voluntary motion are, of necessity, ultimately lost in consequence of the excision of several inches of some of the largest nerves of the body." In a work already referred to (Outlines of Human Pathology), we find the following case: "The third of an inch of the radial branch of the spiral nerve, where it lies in the back of the hand, was removed on account of a gnawing pain extending along the radial branch of the spiral nerve, and then along the trunk of that nerve to the shoulder, from the cicatrix of a wound by a table-knife on the outside, and to the back of the base of the first phalanx of the forefinger. While the back of the hand, thumb, middle finger and forefinger, as far as the original cicatrix, were numb, all the back of the forefinger, from the cicatrix to the tip, had feeling as perfect as that of the back of the other forefinger. Mr. Mayo, in accounting for it, supposes that in the three months and a half between the accident and the operation, "Sensation had made its way through the junctions of the index branches of the median nerve, and the divided digital branches of the spiral, circuitously, to the back of the forefinger." Later, the back of the middle finger and thumb regained some sensibility. In the well known case of Corliss (Gunshot Wounds and other Injuries of Nerves, p. 113), there was sensibility in the median distribution thirty months after two inches of the nerve had been removed. Dr. Nott, like Mr. Mayo, thinks, in his case, "as the function of the median nerve was probably gradually destroyed, nature made provision to supply its place; but how it was done" he declines to decide. The narrators of Corliss' case ask the question: "Was the nerve reproduced?" The many vivisectory experiments on the reproduction of nerve tissue, and the conductible power of neuro-cicatrices, and the perfection of the union of nerves after section, leave the point, to our mind, in doubt. M. Nelaton's case,[1] similar in some respects to that of Dr. Nott's (April, 1863,) in which a portion of the median nerve was removed with a neuroma, and the divided ends brought in contact and secured by a silver wire, and of sensation and motion completely restored after eight days, proves nothing. Nor is that of M. Laugier[2] (June 1864), in which the ends of the median nerve, completely severed in a severe wound of the forearm above the annular ligament, were brought into contact by means of a silken ligature, which cut out on the 12th day, and sensation and

[1] Gaz. des Hôpitaux, No. xl., 1864.
[2] Comptes Rendus, 1864. Gaz. Med., Nos. 27 and 31, 1864.

motion regained in the previously paretic parts, any more satisfying. In the cases of Mr. Stanley and Mr. Heygate, mentioned by Mr. Paget,[1] though no ligature was used, the results were the same. Schiff, remarking on the latter cases (Physiologie), says that where there is no loss of substance, nerve tissue heals rapidly within a few days. Ellenberg and Landois failed, however, in every instance, in their experiments on animals, to obtain union of the divided nerves. The section, in many instances, was followed by degeneration, or by neuritis or peritneuritis, with suppuration.[2] Broca, in his various experiments upon excision of the sciatic nerve in sheep, never was able to obtain reunion of the divided nerves. Mere union of the ends of the nerve-trunks should not be confounded with regeneration, which implies reintegration and intercommunication of nerve fibres. Whilst not rejecting the probability of the anastomosing provision of nature, we must not forget the experiments first made by Humboldt, sixty-seven years ago, which conclusively show that nervous influence may act across a gap in the nerve texture, and which tend to make the class of cases we are speaking of not altogether unintelligible. A case was recently observed by Dr. Radcliffe, in the Westminster Hospital, in which a part of the spinal cord was as diffluent as ordinary cream, and yet the loss of motion and sensation in the parts below the lesion were by no means so great as might have been expected; and he well observes, that, "if nerve influence can act as it is seen to do in these experiments (just referred to), it is not difficult to believe that it may also act in a case where the place of an actual gap is filled up with altered or disorganized nerve tissue."

In his first case, Dr. Nott most unaccountably makes no mention of the ascertained condition of sensation in the stumps, after the several nerve exsections, though he states, and finds it "difficult to say why," the pain was still referred "to *the extremity of the existing stump.*" He says: "Even in the two instances in which I exsected the nerve, the pain was referred to the stump, as it had been in every amputation." In both of Mr. Herbert Mayo's cases we have quoted, he remarks: "The patient seemed to feel pain at the section of the nerve," the portions removed being taken from the distal end after division.

[3] Lectures on Surgical Pathology, third ed., p. 203.

[4] Berlin. Klin. Wochenschr., i, 1864.

Étude Ophthalmoscopique sur les Altérations du Nerf Optique, et sur les Maladies Cérébrales, dont elles dependent. Par X. Galezowski. Paris: Libraire de L. Leclerc, 1866, p. 106.

Du Diagnostic des Maladies du Système Nerveux par Ophthalmoscopie. Par E. Bouchut. Paris: Germer Baillière, 1866, p. 503.

These books mark another step of progress in physical diagnosis. Doubtless, one of the most brilliant discoveries in medical science during the present century has been the ophthalmoscope. It has revealed to us the internal pathology of the eye, and given us an exactness of diagnosis unknown and impossible in any other cavity of the body. By it we may study changes of tissue with the aid of a magnifying power of about fifteen diameters. It is true that some subtle alterations yet elude inspection, invisible to the observer, yet producing loss of vision; but this is no marvel, when we know that the true anatomy and physiology belong to structures visible only to the microscope, and that the beginning of pathological change can, of course, only be detected in the same way.

The same is true in disease of other organs, as, for example, the kidney, which, to the naked eye, may appear healthy, but under the microscope frequently shows serous disease. But in ocular pathology we have been taught that amaurosis and amblyopia are, in the great proportion of cases, the result of changes localized in the eye, and taking origin in the choroid, the retina and optic nerve. Formerly, when these structures could not be inspected, the loss of sight was more commonly assigned to disease of the brain, and, secondarily, of the optic nerves.

At the present time, with the ophthalmoscope in our hands, we are endeavoring to solve the problem, what ocular changes belong primarily to the eye? and what result in consequence of lesion of other nervous centres?

The two books above cited are devoted to descriptions of cases belonging to the latter subdivision. Their point of view is not, however, from the side of ocular pathology, but from the field of cerebral disease. They seek to elucidate the latter by adding to existing facts and means of investigation the symptomatology which, with the ophthalmoscope, may be gathered from the interior of the eye.

Of the authors, one has successfully devoted himself more especially to ophthalmic practice; the other is widely known by his studies in general pathology.

It is evident that one must be entirely familiar with intra-ocular pathology before attempting to decide upon the nature and bearing of what may be discovered. It is also needful to understand the errors of refraction, and the varied appearances which come under the category of physiological conditions. Possessing this knowledge in a high degree, M. Galezowski is able to avoid certain errors of interpretation into which M. Bouchut appears to fall. For example, the latter (page 360) seems to doubt whether the impairment of sight which sometimes follows diphtheria is due to paralysis of accommodation, or to congestion and serous infiltration of the retina and optic nerve. That the latter condition may occur is undeniable; but in by far the greater proportion of cases the former is the true explanation. Another remark may properly be made, that one may not rely exclusively upon the ophthalmoscope. The degree of vision should be carefully noted by means of proper tables—Snellen, or Dyer, or Jager—the print being placed at its proper distance, and not only direct but indirect vision should be scrutinized; in other words, the visual fields which correspond to eccentric parts of the retina should be carefully studied.

Investigation of the function of vision and of the actual state of the fundus oculi are abundantly proven, by the observations in these treatises, to furnish valuable information in the study of diseases of the brain, and other parts of the nervous system. So striking are some of the facts, that it may be affirmed that no case of cerebral disorder has been fully investigated until the function and structure of the eyes have been studied. In the symptomatology of brain disorders, the state of the pupil is always noted; but this index of cerebral disturbance is far from being as prompt, as significant or as reliable as are the phenomena of the optic nerve, the retina and the intra-ocular blood vessels. The ophthalmoscope becomes, therefore, necessary to the apparatus of every general hospital, and to every lunatic asylum. It is equally necessary that those who use it should be thoroughly conversant with what it reveals.

The treatise of M. Galezowski is divided into three parts. The first explains briefly the way to use the ophthalmoscope, and gives the normal anatomy of the optic nerve and retina. On page 24, speaking of the occasional presence of opaque optic nerve fibres in the retina as a congenital anomaly, the author says he has never observed that in these cases there was any impairment of sight. We remember four cases of the kind, in all of which there was decided amblyopia. The optic nerves are traced to the brain, and their connections portrayed. The dominant influence upon sight of the tubercula quadrigemina is mentioned, and the accessory influence belonging to the corpora geniculata. It is also shown how adjacent parts may, in disease, indirectly affect the functions of the optic nerves.

The second part describes the pathology of the optic nerve, its perversions of function and changes of structure. The latter comprise alterations of the circulation and of the texture, level, color and form of the nerve. Lesions of the retina and choroid are also necessarily introduced.

The third part is what gives the book its chief value—it relates to "diseases of the brain which cause amaurosis." Congestion, apoplexy, encephalitis, basilar meningitis are first described, in their effects upon the optic nerves; then tumors at the base of the skull, and tumors in various regions of the brain, with a brief allusion to tumors of the optic nerve.

Under encephalitis, the author includes softening of the brain, whether acute or chronic, and discards the distinctions of white, red and gray softening. He also includes all the causes of softening, as induced by syphilis, or as occurring in the vicinity of clots, and whether local or general. The difficulty of distinguishing acute softening and true apoplexy is often great. It is hoped that in this dilemma the ophthalmoscope may offer valuable aid. On this point M. Galezowski does not lay great stress, but in M. Bouchut's brochure important data are given. He says, page 189:

> "If an individual, with or without premonitory symptoms, is suddenly taken with hemiplegia, and loss both of consciousness and of sensation, and the question arises whether the case be one of hemorrhage or of acute softening of the brain, the answer will be: that tension and prominence of the globe; varicosity and dilatation of the retinal veins; œdema of the retina immediately around the optic nerve; acute glaucoma and choroidal hemorrhages will, if present, enable us to affirm the presence of apoplexy, and reject the supposition of acute softening. These symptoms imply intra-cerebral pressure, from the sudden intrusion of a foreign body into the midst of the brain."

It must, however, be admitted that, if the quantity of blood effused be small, or be situated remote from the ocular blood vessels, the above symptoms cannot be anticipated.

M. Bouchut gives a table of thirty-one cases of apoplexy, in which ophthalmoscopic observation was made; these cases were most of them recent. In all but two some ocular symptoms were observed. In seventeen cases, symptoms were noted which could be confidently relied upon as evidence of intra-cranial hemorrhage. The symptoms were, distension of the veins of the retina in ten cases; serous infiltration of its tissue in fourteen cases; hemorrhage into it in four cases.

Certainly, such testimony is not to be thrown away in deciding a difficult question of diagnosis.

M. Bouchut gives another table of cases of acute meningitis, forty-seven in number; and of chronic meningitis, twelve in number, in which the ophthalmoscope was used. The symptom which he found to be uniformly present was hyperæmia of the edges of the optic disc, the effect of it being to render the outline indistinct; in some instances, the "peri-papillary congestion" affected only a portion of the margin; the central parts of the disc retained its normal, faintly pink hue. Joined to this were other signs of disturbed circulation, but none so constant as that indicated. M. Bouchut (pages 62–63) attributes this congestion to the hindrance to the circulation through the cavernous sinus, and the explanation will readily be accepted.

M. Galezowski devotes a section to peri-neuritis optica, and connects it, as well as neuritis optica, with meningitis. It remains to be seen whether the distinction between neuritis and peri-neuritis can be made of any value in diagnosticating meningeal inflammation from diseases in the substance of the brain.

It must be remarked that neuritis optica may subsist as a primary disease, and the brain be wholly unaffected. This fact is of constant experience in ophthalmic cliniques. It is implied above that there were other evidences of cerebral disorder besides those seen in the eye.

But we are tempted to dwell too long on these points. Tumors of the brain occupy considerable space in the pages of both books. Many cases are cited, and the effects resulting from differences of location are pointed out. It is made clear that the situation of tumors in the anterior portions of the brain, and also as they may be related to the chiasma of the optic nerves, can be pretty well made out. Of course, all the facts to be taken in proof are not of recent discovery, such as hemiopia, on similar or opposite sides; nor is the ophthalmoscope relied upon exclusively. The field of vision is to be carefully mapped out.

M. Galezowski describes cases of amaurosis from tumors in the hemispheres occupying the anterior, the middle and the posterior lobes; amaurosis from tumors in the thalami optici, in the crura cerebri, in the tuber annulare, in the cerebellum, and in the tubercula quadrigemina. Many interesting facts are brought together, and by careful study of them much may be done to give preciseness to our notions as to the existence and situation of cerebral tumors.

M. Bouchut alludes with less fullness to the same topic. In the latter's book are also chapters on troubles of sight occasioned by diseases of the spinal cord, by rickets, by epilepsy, by poisons, viz.: tobacco, alcohol and lead. On the subject of the mischief which tobacco causes upon sight our authors are in opposition. M. Galezowski believes it to be in this respect innocuous, while M. Bouchut entertains the view, which is more commonly held, that it does sometimes cause detriment to sight.

The subject of insanity, and its relations to vision, is also alluded to, but we cannot enter into it. It would seem self-evident that every expert in a lunatic asylum ought to be able to inspect the optic nerves, and, while they are often intact, they sometimes tell a tale which will corroborate other evidence of insanity. It is a fact noted by Professor Graefe, that many cases of idiopathic atrophy of the optic nerves ultimately develop insanity.

The treatise of M. Galezowski is terse and precise; all questions of visual function are fully considered. M. Bouchut indulges in considerable speculation, and has made a somewhat ambitious attempt at completeness, by introducing chapters in which little information is given on the subject proposed, and in other chapters he treats of matter about which more can be learned elsewhere, as concerning albumiuuria in its effect on sight. Both books are valuable, because they contain not a few new facts, and many original and careful observations.

It may be remarked that to facilitate ophthalmoscopic examination of patients who must lie in bed, or where a room cannot be effectually darkened, M. Galezowski has mounted a mirror and lens in a tube which shuts up like a telescope, and which can rest against a patient's forehead. Doubtless this form of instrument would be advantageous under such circumstances.

We close our imperfect notice by reaffirming our opinion of the value of the means of diagnosis to which these treatises call attention. The subject is in its infancy. In England, Dr. Hughlings Jackson has devoted attention to it, and contributed to the Ophthalmic Hospital Reports many cases of cerebral disorder in which he found the ophthalmoscope useful.

While not pretending to assume for it a controlling importance, it is self-evident that nowhere do we approach so near to the brain as when we inspect the extremity of the optic nerve. We are looking at a structure which enters into the cerebral mass, and we have before us an outlying portion of the vascular system which supplies the brain. A physician who studies all the phenomena of disease will certainly be unwilling to neglect to scrutinize parts which may give him facts of the highest value. If to do it he must spend time and patience, to acquire needful skill in the use of a new and somewhat difficult instrument, he must accept the new labor imposed upon him, as something which the advance of knowledge inevitably imposes. The microscope, the stethoscope, the endoscope, the speculum, the ophthalmoscope, give us deeper insight into disease; and if physicians would understand what they are dealing with, they must be able either themselves to use these instruments, or if (*ars longa, vita brevis*) proper skill in such niceties cannot be attained, they must ask the help of some professional brother, who, perchance, may bear the somewhat questionable but not unworthy distinction of being a specialist.

QUARTERLY REPORT ON SURGERY.

[Continued from page 79.]

9. *Furuncle of the Face Complicated with Phlebitis.* (Journal Hebdomadaire de Méd. et Chir., Jan., 1866.)

In one of the September meetings of 1865, M. Broca reported before the Surgical Society of Paris a case of anthrax in the nape of the neck, ending in denudation of the spine and phlebitis of the lateral cerebral sinuses. During the interesting discussion on the case, which was not the first met with by Broca, Trelat called attention to the existence of phlebitis with furuncles of the face, the inflammation passing through the ophthalmic vein from the face to the cavernous sinuses. He briefly alluded to the six following instances, taken from a thesis by Nadaud, "Sur les Furoncles de la Face, 1864:"

1. A student, weakened by repeated hæmoptisis, had several furuncles, one of them in the upper lip. He died eleven days after, with chills, cephalalgia, exophthalmos, and severe general symptoms. At the autopsy, there was found an abscess under the furuncles, phlebitis of the facial and ophthalmic veins, and of the cavernous and circular sinuses. (Follin. Traité de Pathologie Externe, article Furoncle.)

2. Facial phlebitis consecutive upon ulceration, probably syphilitic, of the lips. (Blachez. Gazette Hebdom., 1863, p. 716.)

3. and 4. Dr. Dubreulle, in reference to this latter case, published two others similar, in the same above journal for 1863, p. 764. The first case was that of a man of 48 years, under the care of Laugier. He was in a low condition from misery and a month of sickness. On his admission into the hospital, he had several small furuncles in the lower part of the forehead, phlebitis of the front parietal veins, abscess of the temple, and exophthalmos due to an intra-orbital abscess. Incisions were made to let out the pus from the veins and abscesses. In the course of two months the general functions were re-established, but the patient remained in a state of weakness and apathy. The second patient, under the care of Dr. Jarjavay, was 45 years old, and of

healthy constitution. A furuncle appeared over the ala nasi, and in fifteen days was followed with serious inflammatory accidents. Several purulent collections in the temple, forehead and upper eyelid were incised. The patient died, and there was found, on the autopsy, a purulent layer under the scalp, an abscess in each of the orbits, purulent phlebitis of the ophthalmic veins and both cavernous sinuses, with purulent infiltration of the dura mater.

5. A case borrowed from a paper by Fritz, on the relations between diabetes and the inflammatory and necrosic affections of the skin. (Arch. Gén. de Méd., 5éme Série, t. xi. p. 213.)

6. A patient observed by Dr. Cazin, who had several furuncles of the face, and died with phlebitis of the cavernous sinus detected on post mortem examination.

A. C., who reports in the Gazette Hebdom. de Méd. et Chir., 22 Dec., 1865, No. 51, p. 815, the proceedings of the Surgical Society, adds a case observed by himself at Mazas, under the care of Dr. Jacquemin. A man about eighty, living in extreme misery and filth, entered the infirmary with a small anthrax in the upper lip. He had chills, fever, and several general symptoms, not in relation with so unimportant a local lesion. After a more careful examination the teeth were found decayed and movable in the alveola, and chronically inflamed; there was, in addition, a long standing osteitis of the upper jaw below the right nasal opening, in a point corresponding with the anthrax on the lip. The following days phlebitis of the facial veins was developed and rapidly spread, gaining the orbital and frontal veins, and causing cerebral symptoms and death, nine days after the patient's admission into the infirmary. On post mortem examination pus was detected in the superficial veins of the face, in the ophthalmic vein, and in the sinuses of the anterior part of the base of the cranium. There were no traces of metastatic abscesses anywhere.

The above cases are interesting in connection with that of the late Dr. Conant, published in the proceedings of the New York Pathological Society. (New York Med. Jour., Vol. ii, 1865–66, pp. 366, 439.)

10. *Successful Extirpation of the Entire Left Scapula and Acromial End of the Clavicle, with Preservation of the Arm.* By A. Hammer, M.D. (St. Louis Medical Reporter, March, 1866.)

The case was that of a young lady, about eighteen years of age, having a tumor situated upon the exterior surface of the left scapula. The size of the tumor was about that of an orange, occupying the infraspinous fossa, scarcely movable, of a round shape, a smooth and even surface, and the skin of natural color, not adhering to the tumor, but free and movable upon it. Palpation conveyed the idea that it was a well developed fibroid. No pain was felt upon the most severe pressure, and only to a slight extent in the afflicted region when the arm was made subject to sudden and forcible action. No swelling of either the axillary or supra-clavicular glands; and all the functions of the general system were, in fact, perfectly normal. Her whole appearance was the personification of general good health. The history of the case is as follows: About two years ago she unexpectedly discovered a small tumor, the size of a hazelnut, the one in question, and situated as already described. Its presence occasioned no inconvenience, much less any pain. From that time on it grew slowly and steadily until it reached the size mentioned. Since early infancy she had never been subject to any sickness, and, within her recollection, had never received a mechanical injury of the afflicted scapula. I concluded that the tumor was a hard, fibrous growth, having a broad base, and arising from the periosteum of the scapula. I, therefore, proposed the extirpation of the tumor. In the latter part of September, 1860, I proceeded to the operation. Under the full influence of chloroform, I made an incision a little above, and parallel with, the spine of the scapula, its entire length, and then another parallel with, and about an inch to, the inner side of the posterior or vertebral border of the scapula, extending to the inferior angle. These incisions admitted of two flaps—one, the larger, and situated external to the vertical incision; the other, internal. After the dissection I at once discovered my mistake of diagnosis; its former hardness, wherein it simulated fibrous tissue, was gone. The tumor was now soft, elastic and easily compressible, adhering firmly to the bone, and slightly encroaching in some situations upon its margins. I remarked that the tumor was most likely of a malignant character, either a sarcoma or true cancer, which would require resection of the scapula, either in part or *in toto*, according to the extent of the growth. I discontinued the operation for several reasons. The microscopical examination confirmed my supposition, exhibiting the elements of the encephaloid form of cancer. Being now intimately acquainted with the nature of the disease, I proposed the extirpation of the entire scapula as the only means of removing the tumor. The margins of the incisions had become thickened and infiltrated with cancerous elements to the width of about half an inch. These I freshened by making new incisions at least one inch distant from the former ones, extending the first incision parallel with the spine of the scapula upwards and forwards upon the acromial end of the clavicle. The insertion of the trapezius and deltoid to the spine of the scapula was cut away, as were also the attachments of muscles to the vertebral and superior borders; then about three-fourths of an inch of the acromial end of the clavicle was removed by the chain saw, the shoulder joint opened by a transverse incision, and the head of the humerus dislocated. The origin of the short head of the biceps, coraco-brachialis and pectoralis minor was detached from the coracoid process, the suscapularis cut away near its insertion into the lesser tuberosity, and the exsection completed by dividing from above downwards the supra-spinatus, infra-spinatus, and the muscles arising from the axillary border; the latissimus dorsi was saved by separating it from the teres major at the interior angle. After the hemorrhage had been arrested, the wound was united by eighteen wire sutures, the arm then brought into such a position that the head of the humerus exactly corresponded in its relations to that of the opposite side, supported by a wedge-shaped pad placed in the axilla, and retained by a bandage similar to that recommended by Desault for fracture of the clavicle. The wound healed by first intention in by far its greater extent. The resected end of the clavicle effected a circumscribed inflammation, which resulted in an ulceration of the skin and exposure of the bone; the cut surface, however, became necrosed in the space of three weeks, and was detached. Healthy granulations then sprang up, followed by rapid cicatrization—the cicatrix, of small size, firm, and somewhat funnel-shaped, connecting securely the clavicle to the skin above and the rib beneath. In six weeks the wound had entirely healed and she was perfectly well; yet it was necessary to support the arm in a handkerchief fastened about the neck. In another six weeks, three months after the operation, the arm was secured in its new position, the head of the humerus being firmly fastened to the ribs by fibrous adhesions and the formation of a sort of new glenoid cavity. In March, 1861, the disease recurred in the shape of a small glandular swelling in the supra-clavicular region. It increased steadily and rapidly, until it reached the size of an egg, when it was removed. In a short time it reappeared in the cervical vertebra, and rapidly invading the spinal marrow. The patient died in July, 1861.

(1.) Five cases, at least, are on record in which the arm and entire scapula were torn from the body by the action of machinery, and all of which recovered. The scapula alone, or with the whole or part of the clavicle, has not been unfrequently excised, after amputation at the shoulder joint, with favorable results; and, occasionally, leaving the arm intact. In 1808 Mr. Cumming exarticulated the humerus, and immediately afterwards excised the scapula. In 1837 the elder Mussey, of Cincinnati, removed the whole scapula and clavicle from a patient, whose arm he had, six years previously, amputated at the shoulder joint. There was rapid recovery. In 1841 Gaetani Bey amputated at the shoulder joint, removing the whole scapula and acromial end of clavicle. Rigaud, of Strasburg, removed, in 1842, the entire scapula and outer extremity of clavicle from a man, in whom he had previously amputated at the shoulder. The entire scapula and clavicle, with the arm, were removed for a medullary tumor, by Dr. Geo. McClellan, of Philadelphia, April 12, 1838, in a boy aged 17. He survived the operation six months, dying from a return of the disease.[1] In the case of Dr. David Gilbert, of Philadelphia, so often quoted, the neck of the scapula, with one-third of the clavicle and the arm only were removed. In 1847 Sir William Fergusson exsected the whole scapula and part of the clavicle in a man who had had his arm exarticulated for caries of the shoulder joint three years previously. In 1863, Mr. Syme removed the whole scapula with the arm, in a man in whom the head of the humerus had been exsected, for a cartilaginous growth, in 1862. On the 11th November, 1865, Sir William removed, in a patient, from whom he had previously excised two-thirds of the scapula, the remainder of the bone, the greater part of the clavicle and whole upper extremity. All these cases were consecutive to scapulo-humeral disarticulation. Mr. Syme, in his memoir on Excision of the Scapula,[2] has the following conclusions: 1. The entire scapula, alone, or together with the arm, may be removed without much difficulty; 2. The wound thus inflicted may heal quickly and soundly; 3. The arm, if preserved, may be strong and useful; 4. Excision of the scapula should be recognized as a legitimate and established procedure of surgery.

Dr. Hammer remarks: "The surgical operation of the entire scapaul with preservation of the arm was the *first time* performed by Prof. B. Langenbeck,

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1 Principles and Practice of Surgery, Phil., 1847, p. 412.

2 Principles of Surgery. By es Syme, Phil., 1866.

in Berlin, in the year 1855; and mine is, beyond all controversy, the second case of the kind on record;" aud he concludes that the feasibility of the opertion is beyoud all question or doubt.

The feasibility of the operation is certainly "beyond all question;" but when Dr. Hammer claims his case as the "second of the kind on record" he is in error. The following cases, where the scapula was removed with preservation of the arm, occur to us:

On the 26th September, 1850, Professor S. D. Gross successfully excised the right scapula, for osteo-sarcoma. Nearly the whole wound healed by first intention in three weeks. The patient in returning home caught cold, and died of pleuro-pneumonia about the middle of December, 1850. (Am. Jour. of the Medical Sciences, 1853.)[1] Von Laugenbeck's case—May 22d, 1855—referred to by Dr. Hammer, seems to have eutirely escaped the British authorities. The subject was a boy, aged 14, with a cancerous tumor occupying the whole scapula. A vertical incision was first made, begiuning at the posterior extremity of the spiue of the scapula. The iutegumeut which covered the infraspinal fossa and the acromion, being diseased, was included betweeu two elliptical incisions; then the scapulo-humeral articulation was opened, the exterual extremity of the clavicle divided, and the whole removed with the tumor. The wound was enormous, but it filled rapidly, aud on the 49th day he was walkiug about and moviug his haud and forearm; he had good use of the limb. On the 109th day he died from the disease appearing in lung and parietal bone.[2]

Later iu the same year, I. F. Heyfelder, of Russia, operated on a man aged 40, of feeble constitutiou, for caries of the scapula. He had, three months before, resected the spine of the scapula, but the disease extending to the root of the boue and scapulo-humeral articulation, he excised the entire bone and resected the head of the humerus. The patient died at the eud of eight days from excessive suppuration.[3]

Ou the 1st of October, 1856, Mr. Syme excised the scapula in an aged female, for a tumor involving the left scapula, in size and form resembling a cocoa-nut. The patient, from an early period afterward, declared that the arm was in no wise inferior to the sound one, and it appeared, indeed, that through the support afforded by the clavicular portion of the deltoid, together with the action of the pectoralis and latissimus dorsi, the limb would be able to execute a fair degree of motion. The shoulder, when viewed in front, assumed a wonderfully natural appearance. The case did well as far as the operation was coucerued; all went on satisfactorily till the end of November, wheu the woman began to fail, and died Dec. 1, 1856.

In 1858, Mr. Jones, of Jersey, removed the entire scapula, together with an inch of the acromial end of the clavicle, for extensive necrosis, in a girl of 14 years of age, who made a good recovery. Within seven mouths afterwards she could raise her arm twelve iuches from the side, and with slight assistance support it horizontally from the body. She could easily raise the

1 The reporter has been informed that Dr. Samuel Choppin, of New Orleans, removed the scapula somewhere between 1850-54; but he can find no record of it.—Rep.

2 Deutsche Klinik, 1855. Traité des Resections. Par le Dr. O. Heyfelder. Traduit de Allemand, par le Dr. Eug. Bœckel. Strasbourg: 1863.

3 Deutsche Klinik, loc. cit.

hand to the opposite shoulder, or to the mouth, but not to the top of the head, and was able to scrub. There was decided falling of the shoulder, but no wasting of muscle on the chest or back. The deltoid was of full size. The head of the humerus could be easily felt moving in its new bed. She was doing well six years after the operation.

Mr. Syme's second case was in a man aged 42, for a tumor, occupying the whole extent of the scapula, and completely filling the axilla. Two years previously Mr. S. had excised the head of the humerus in this man for a tumor of the right shoulder, under the deltoid, of the size of a hen's egg. The arm bone was sound. On the 13th November, 1862, the whole scapula was excised. The tumor weighed between four and five pounds. In six weeks the recovery was complete. There were perfect mobility and strength from the elbow downwards. Considerable command over the movements of the arm from the shoulder was acquired from the scapular muscles being united to each other, and to the interjacent cellular tissue. Heavy weights could be lifted with ease. Continued well fifteen months afterwards.

On the 26th June, 1865, Sir William Fergusson removed the entire right scapula (except the acromion process, for reasons presently to be given), for a medullary tumor, involving that bone, the size of two fists, and of rapid growth, being of eight weeks' duration. There was free movement of the upper arm. Integuments not involved. The patient being placed under chloroform, an incision was made over the neck of the acromion process, at right angles to it. The bone being exposed, a small saw was used and the process detached. An incision was then made along the spinous process, and a third almost at right angles with this along the posterior border of the scapula. The flaps included by these incisons were next reflected, and the tumor was exposed, the muscles covering it being implicated in the disease in a great measure. He next seized the spinous process with the "lion forceps," and lifted up the mass in order to expose and cut through the capsular ligament of the joint. When this had been effected, the forceps were applied to the axillary border of the bone, and it was thus lifted from off the walls of the chest, and the muscles cut through. A considerable amount of hemorrhage occurred at this part of the operation, owing to the division of the sub-scapular and dorsalis scapulæ arteries. The mass was still firmly held by the muscles attached to the coracoid process; these and the coraco-clavicular ligaments were divided, and the diseased scapula was removed. The articulation was perfectly healthy. The bleeding vessels were tied, the flaps brought together by sutures, strapping and a large pad placed over the wound, and the patient removed to bed. For two days the position of the patient was critical, and he required brandy and beef-tea. On the 19th Aug. he was found looking hearty, with considerable power of moving the arm in an antero-posterior direction. Sir William remarked that in accordance with the description of Mr. Syme, he had disarticulated at a somewhat early period—his intention being to take the tumor and bone out from before backwards. In disarticulating and also separating the coracoid process the difficulties were greatest, and vessels were divided near the axilla at points where they could not readily be compressed. In consequence of what he now referred to, he should be disposed, if called on to perform this operation again, to isolate the back part of the mass first, and so leave the disarticulation to the last; both because the parts could be more readily got at by holding the scapula forwards, and because the larger blood vessels would not be cut until the time when the growth was about to be finally separated. One feature Sir William particularly dwelt upon—that he had preserved the acromion process; partly because it was not diseased, but chiefly because the shoulder would thereby be left more perfect both as to appearance and use; for by so doing the portions of the trapezius and deltoid attached to that process were left entire; and, in addition, that the incisions were thereby less extensive and less destructive. Five months afterwards this man was in good health. There was but little deformity, and, owing to the attachment of the trapezius muscle, the mobility of the arm was excellent; it could be moved in every direction, and lifted laterally with ease and evident power.

Mr. Pollock, on the 27th July, 1865, excised the entire scapula, at St. George's Hospital, for a tumor occupying the infra-spinous fossa, the size of a fœtal head, in a girl aged 16. She was placed under the influence of chloroform, and, the subclavian artery being compressed by an assistant, an incision was made along the vertebral border of the scapula, and the tumor freed by tearing through its attachments on this side. An incision was then made down the axillary border, and extended in a semi-circular manner over the top of the tumor to meet the former one. The acromion process was then cut through, and the whole mass forcibly torn, with the occasional aid of the knife, from its attachments. The quantity of blood lost during the operation was small; this Mr. Pollock attributed to the fact that the subclavian artery had been compressed during the procedure. He had commenced to detach the scapula at its posterior border, and then at its inferior angle. The detachment was thus a very simple matter. By throwing the scapula outwards and upwards an assistant was enabled to grasp the sub-scapular artery before it was divided. This was by far the most formidable artery in operation, and there was no hemorrhage upon its division. He had adopted the plan, which he had seen recently pursued by Sir William Fergusson, of cutting through the acromion process and leaving its extremity. The clavicle being untouched, a sort of cup was formed for the head of the humerus, and there would, he thought, be little deformity.

Dr. Frank Hamilton recently removed the entire scapula, at Bellevue Hospital, New York City, and resected the head of the humerus, in a discharged soldier. The case promises to be successful.

11. *A Case of Excision of Enlarged Spleen.* By SPENCER WELLS, F.R.C.S. (London Medical Times and Gazette, Jan. 6, 1866.)

Quittenbaum, of Rostock, in 1826, and Küchler, of Darmstadt, in 1855, each excised an enlarged spleen. Quittenbaum's patient lived six hours, and Küchler's two hours. At a meeting of the London Pathological Society in December, 1862, Mr. Spencer Wells, the bold ovariotomist, then and there declared that if he "met with a case where the patient was evidently being killed by a large spleen, where all remedies had proved useless, and where the dying person was willing to run the risk on the chance of saving his life, he would certainly be disposed to remove the tumor." (Med. Times and Gaz., Dec. 13, 1862.) The first chance he got to commit a surgical murder, by this method, was in November, 1865, when he was consulted by a married woman, 34 years old, who was evidently dying from a large spleen, and who had no other disease. (?) The spleen extended as high as the seventh rib, and so low in the pelvis that it could be felt by the vagina in front of the uterus. The notch was distinctly perceptible a little above the umbilicus. On the right side, below the umbilicus, it extended within three inches of the anterior superior spine of the ilium. On the left side the posterior border was felt quite free, and well defined in the loin. It was impossible to ascertain by palpation or percussion where the enlarged spleen, and left lobe of the liver met, nor could any enlargement of the liver be detected. There was no other glandular enlargements; no œdema, nor dropsical effusion; complexion rather pallid; hue of lips, gums, and conjunctivæ good; appetite good; tendency to constipation; soft anæmic cardiac murmur; slight excess of white corpuscles in blood; a small tumor just above umbilicus, to the right of the notch in the spleen, supposed to be either a splenculus or part of pancreas; heart pushed a little upwards, and to the right; air entered both lungs freely. Dr. Jenner gave his opiniou that the patient could not live long, but that excision of the spleen did give the "*shadw of a chance*" of saving life.

Mr. Wells proceeded to operate. "An incision was made along the outer border of the left rectus abdominis, which extended five inches above and two below the umblicus. Two arteries were tied before the peritoneum was opened. In opening the peritoneum rather a large artery was cut across in a piece of omentum, which was loosely adherent between the surface of the spleen and the abdominal wall. The vessel was tied. The adhering portion of omentum was separated, and by putting in my hand and turning the lower edge of the spleen first through the opening the whole of it was easily removed. The intestines were prevented from escaping by Dr. Wright, who kept the edges of the opening carefully together behind the spleen, which was held only by the vessels and the gastrosplenic omentum. I was beginning to twist the spleen round to bring the vessels into a sort of cord preparatory to applying a ligature, when the splenic vein, which was as large as a small finger, gave way, aud blood ran freely from the spleen; but none was allowed to enter the abdomen, and I at once inclosed the vessels in a large clamp, and cut away the the spleen. Before tying the vessels, temporarily secured by the clamp, I passed eight silk sutures to keep the edges of the incision well together. The peritoneum was thus protected, and the viscera retained while I was dealing with the vessels. These were tied in two bundles above the clamp, which was then loosened, and two arteries and a vein were also separately tied before it was finally removed. On taking it off, I found that a part of one end of the pancreas, as large as the end of a thumb, had been bruised by it. All the ligatures, except those on vessels in the abdominal wall, were cut off close and returned with the included tissues. The sutures were then tied, and the abdomen was well supported by plaster, pads of lint, and a bandage. Mr. Clover told me that the patient was thirty-five minutes under the influence of chloroform, that she had borne it with less evidence of shock than he had often observed during ovariotomy, and that her pulse throughout was between 80 and 90. The spleen is now in the museum of the Royal College of Surgeons. It weighed on removal 6 lbs. 5 oz. avoirdupois;

but nine ounces of blood drained out of it, leaving the weight 5 lbs. 12 oz. It measured 11 inches in length, 8 in breadth, and between 3 and 4 in thickness. The patient died 158 hours after the operation.

"The body was examined, twelve hours after death. Decomposition had advanced with unusual rapidity. Fluid blood and air bubbled from the superficial veins as they were opened. The wound was perfectly united, but the cutaneous edges were separated without difficulty. The peritoneal edges adhered much more firmly. Two ligatures on superficial vessels came away with a very slight pull. A few drops of pus were observed in the track of one of the ligatures. There were no signs of general peritonitis; scarcely any serum, and not a trace of blood being found in the abdomen. Redness and effusion of lymph were entirely limited to the seat of operation. The ligatures on the blood vessels were found with difficulty, being overlapped by the pancreas, which was large. The liver was also large. The kidneys were healthy. Both pleural cavities and the cavity of the pericardium contained a large quantity of dark red serum. The lungs were healthy, although there were old pleural adhesions at each apex. The heart was large and flabby, and contained soft clots, which extended along the pulmonary artery to the second divisions. This was the only clot found in the body, the blood elsewhere being thin and fluid, and air bubbling out wherever a vein was opened."

Too strong reprobation of this unphilosophical and unjustifiable operation cannot be expressed. It was simply a case of homicide, Mr. Wells acknowledging that, from the two previous cases on record, "it was doubtful whether a human being would recover from the immediate effects of the operation. The case now recorded does at least make this addition to our knowledge. It also proves that neither hemorrhage nor peritonitis necessarily follows the operation. Some alteration in the blood, which becomes fluid, and permits of a rapid exudation of serum into the pleural or other serous cavities, may perhaps prove in other cases, as in this, to be the chief danger to be dreaded."

The only treatment in the case, it would appear, had been bromide of potassium *once a day*, quinine having been once tried and abandoned, because it caused headache. The external use of the biniodide of mercury, as recommended by Professor Maclean, Royal Victoria Hospital, Netley, in whose hands it has proved so wonderfully successful in the most unpromising cases, was entirely overlooked by the eager surgeon and complaisant physician.

12. *Fissure of the Anus.* By Juriah Harris, M.D. (Savannah Journal of Medicine, Jan., 1866.)

This affection, from the severe local distress, and the constitutional disturbance so frequently accompanying it, and its rebellious nature to all palliative modes of treatment, is a matter of considerable interest. The only radical treatment is the removal of the contraction of the sphincter. This is best effected by forcible dilatation, first suggested by Mr. Recamier, and recently revived by M. Aran. Two fingers are successively but forcibly passed into the rectum, and forcible traction made in opposite directions; first towards the perineum and cocyx, and then laterally.

Dr. Harris relates a case where this operation was successfully performed.

13. *Pneumatocele of the Cranium.* By LOUIS THOMAS, (Archives Gén. de Médecine, Jan., 1866.)

The first case of this affection was observed by Lecat, in 1741, but not published till 1798 (Recueil des Actes de la Société de Santé de Lyon, t. i.), and styled wind-tumor of the head, with exostosis of the bones of the cranium; the next by Mr. Lloyd, of Wuxam, 1779 (Med. Obs. and Inquiries by a Soc. of Physicians in London, t. vi.), who called it "flatulent tumor of the head;" and subsequent ones by Pinet (1833), Jarjavay (1849), Chevance de Wassy (1851); and Balassa (1853). In 1859 Prof. Costes, of Bordeaux, published a memoir (Moniteur des Hôpitaux, t. vii.) on "*Tumeurs Emphysémateuses du crane, region temporale, lesions de l'apophyse mastoide, article omis dans les traités de pathologie chirurgicale,*" in which he included all the then known cases. Voisin's case (1853), was published in 1860 (Thèses de Paris, No. 280), and another by Ribievo Vianna (Gazette Med. de Lisboa, t. i.), in 1862. To these eight observations, which he reproduces, Dr. Thomas adds another, studied in the service of M. Desnonvilliers in 1865, making a total of nine cases of this rare disease. The air is situated between the pericraneum and the cranial bones. Its composition, in 100 parts, was nitrogen, 87·28; oxygen, 10 88; carbonic acid, 1·01, in Dr. Thomas' case. In eight of the cases the pneumatocele was the result of perforation of the external walls of the mastoid cells, and once only followed that of the frontal sinus, the result of atrophy of the parietes. All the persons affected were between 16 and 57. Percussion of the tumor leaves no doubt of its nature. It is benignant. The indications of treatment are, to cause the disappearance of the collection of gas; to obtain adhesion of the separated pericranium; and, finally, to close up the openings which have given passage to the air, and prevent recurrence. When the tumor cannot be reduced by pressure, it should be punctured with a very fine trocar. Compression should be subsequently used to secure adhesion of the pericranium.

14. *Removal of Entire Humerus and Heads of Ulna and Radius after Gunshot Injury. Good use of Arm by aid of an Apparatus.* By JAMES B. CUTTER, M.D. (American Journal of Medical Sciences, Jan., 1866.)

A Minie ball passed through the shoulder joint, Nov. 27, 1863, fracturing the head and neck of the os humeri, which were removed, with three inches of the shaft, three days afterwards. Ten days subsequently an abscess formed at the elbow joint, which was opened and gave exit to a large quantity of pus. July 21, 1864, an operation was performed for the removal of entire bone, including the heads of ulna and radius. Continued the incision made in the first operation, down the ulna line of the arm to the forearm; removed the bone with very little injury to the surrounding parts. No ligatures were required, as the bleeding was completely arrested by the use of cold water. It is proper to state that the tubercle of the radius was left, leaving the insertion of the biceps muscle. The lips of the wound were brought together with silver sutures and adhesive plaster, and comfortably supported at a right angle with splints. Succeeded in getting union by first intention almost throughout the entire length of incision. Three weeks after operation wound healed completely, and patient moving about.

The carpal, metacarpal, and digital muscles were left powerfully subservient to the will for grasping, holding and pulling, though there is some paresis of the extensor-carpi digitorum. The arm, forearm, and hand are daily regaining a healthy tone; biceps and deltoid muscles contract strongly, zigzag, for lack of fixedness; the entire arm and hand are somewhat atrophied. The arm is shortened one and a half inches, is extremely flexile and ungovernable.

Three months afterwards, Dr. E. D. Hudson, the orthopraxist of New York, made and applied an apparatus, the incipient results of which were: Arm and forearm supported, strong, and reliable; arm oscillates at the shoulder; forearm flexes at will, at a right angle with the arm; holds parcels in his hands, lifts a pail of water perpendicularly, pulls strongly on a horizontal line. With practice will regain a highly commendable and gratifying use of his arm and hand, and demonstrate the exceeding utility and propriety of the extreme exsection as a beneficial alternative for an amputation. Dr. Hudson writes under date of November 27, 1865, that he has "since improved and reapplied this apparatus, omitting the waistband, and substituting an elastic strap across the chest from the shoulder pad to a soft pad passing beneath the axilla of the opposite arm; further than that, the general principles remain the same; and he is improving in the use of his arm. He was in here a few days ago, took an arm-chair and swung it around at an elevation of 45°—almost at a right angle with the body."

15. *Deaths from Chloroform.* (Med. Times and Gazette, Jan. 6, 1866.)

At a recent meeting of the Berlin Medical Society, Dr. Hüter related a case of death from chloroform in a boy four and a half years old. He was brought to the Surgical Polyklinik for retention of urine. He had œdema and albuminuria following scarlatina. He was so restless that it was deemed prudent to administer chloroform before passing the catheter. A small quantity was exhibited on a napkin. Two or three minutes subsequently the lips were observed to become blue and the jugulars distended, while the pulse and respiratory movements ceased. A deep inspiration was caused by passing the finger down to the epiglottis, but this could not be renewed; a second one, however, occurring upon opening a vein of the neck and discharging an ounce or two of blood to relieve the turgor. Tracheotomy was now resorted to (a third inspiration occurring during its performance) and artificial respiration performed, the diaphragm being at the same time stimulated by the induction apparatus, and the face kept sprinkled with cold water. Electricity was also applied in the region of the heart, and this was followed by acupuncture of that organ by means of two long needles. The heart's action, which had ceased to be audible, was seen by the regular and isochronous movements of the needles to become temporarily revived. These, however, soon ceased. All these means were most energetically applied by able assistants, and Dr. Hüter does not see that in a similar case he could do otherwise, excepting, perhaps, that he would resort to acupuncture of the heart at an earlier period. No account of the autopsy is furnished.

Another case of death from chloroform is stated (London Lancet, Jan. 27, 1866) to have recently happened at St. Mary's Hospital, London, in a healthy man, to whom it was exhibited on a handkerchief, with all proper precautions, for evulsion of a nail.

In the *Edinburgh Medical Journal*, Jan., 1866, Dr. James D. Gillespie narrates a case of death while under the influence of chloroform. The subject was a young lady, nearly seventeen years of age, who had repeatedly taken chloroform for tooth extraction. A small quantity of chloroform was sprinkled on a handkerchief, which was held a short distance from the face, the subject lying on a sofa. After a few inhalations she became violent, struggling, and screamed out very loudly, as if she felt the extraction of the tooth. Having got a very small further supply on the napkin, Dr. G. was proceeding to administer it, when the subject appearing sufficiently unconscious, it was put aside. The jaws were now firmly clenched, but the forceps were applied and the tooth extracted. "I then," says Dr. Gillespie "rose from the side of the sofa, and went to the table, which was scarcely a yard distant, when I was startled by one or two gasping respirations, which I have only heard when a patient was dying. Alarmed, I dashed some cold water over her face, which was deadly pale; examined the pupils, which were greatly dilated; pulled out the tongue, which was not retracted; felt for a pulse, but in vain; and I then became convinced she was dead." Artificial respiration was immediately practiced; the hands put into hot water, and the feet and chest vigorously rubbed. These efforts were continued for half an hour, but to no purpose, the pupils still continuing in their dilated state. The amount of chloroform used was fifty minims, and of this not more than one half was actually inhaled. Dr. Douglas Maclagan, Professor of Medical Jurisprudence in the University of Edinburgh, states, after examination of the chloroform used, "chemical analysis completely failed in discovering the cause of any deleterious or poisonous action which it may have exerted;" although the specimen did not come up to the standard of purity which the British Pharmacopœia enjoins, it exhaling an exceedingly faint odor of turpentine, and potassium, when added, disengaged gas freely. At the autopsy nothing abnormal was found, save that the left ventricle of the heart was very firmly and unusually contracted, and, as well as the left auricle, was perfectly empty. The right side of the heart was not gorged with blood.

16. *On the Treatment of Wounds and Ulcers by Currents of Air.* By Dr. Berenger-Féraud. (Bulletin Gén. de Thérapeutique Médicale et Chirurgicale, Jan., 1866.)

This method was proposed by Bouisson, of Montpellier, in 1861. Five cases are reported by Dr. Berenger-Féraud, where it was successfully used. It is recommended to apply first one or two alcohol dressings, to diminish the hypersecretion of leucocytes. A common parlor bellows is the instrument employed. Each sitting varies from five to twenty minutes, until the surface is covered with a thin pellicle, shining and slightly wrinkled at the periphery, and sufficiently thick and dry to bear the application of a piece of silk paper without its sticking. Ventilation should be repeated within three or four hours after the first application.

17. *Villate's Fluid in Caries and Fistula.* (L'Union Médicale, Jan. and Feb., 1866.)

In March, 1863, Dr. Notta published a memoir on the treatment of caries and fistulæ consecutive to cold and tuberculous abscesses, gunshot wounds, disease of the frontal sinus, by the famous veterinary remedy, Villate's Fluid. Subsequent experience has confirmed his views of its efficacy in these affections. It has, he states, been largely used by Mr. Nelaton, and with the same happy results. It should be used only in chronic cases, for where any acuteness exists, instead of a salutary, modifying inflammation, it is very apt to cause phlegmonous phenomena with serious consequences. It should be injected, every second, third, fourth or fifth day, into the fistulous tract, according to the effects produced, and sometimes for three or five days continuously, and then be discontinued, when inflammatory symptoms are developed, to be resumed subsequently. But in rebellious cases it should be used daily. It is sometimes advisable, where the caries is superficial, and where the wound is accessible and filled with fungosities, to use a piece of lint moistened with the fluid. The application causes severe pain, which lasts from one to twenty-four hours. Dr. Notta gives eighteen cases in which it was used. Its composition is: Aq. plumbi subacetatis, f℥j.; Cupri sulphatis chrystal; Zinci sulphatis chryst. ā ā, ℥ss; Aceti, f℥vj.

18. *On Coagulating Injections in the Cure of Varicocele.* By M. Maisonneuve. (Gazette des Hôpitaux, No. 9, 1866.)

Pravaz showed by his experiments, in 1852, that a few drops of a solution of the perchloride of iron injected into a vein would instantly produce a solid clot, and obliterate the vessel. This fact was soon utilized in the treatment of varices, and the largest and most inveterate were speedily and harmlessly cured. Some difficulty was experienced in the application of this method to the treatment of varicocele—the veins of the cord, on account of their mobility, rendering the introduction of the trocar of Pravaz practically impossible. M. Maissonneuve claims to have overcome the difficulty by the invention of a canular trocar, similar to the one used in hypodermic injections. As soon as a jet of blood announces the entrance of the canular trocar into one of the enlarged veins of the cord, the nozzle of the syringe containing the chloroferric liquid is introduced into the trocar, and the coagulating fluid, to the amount of from fifteen to twenty-five drops, injected. Several successful cases are appended.

Dr. L. W. Miner, of Brooklyn, we are informed, has been in the habit of operating successfully in cases of varicocele, by this method, for several years; in which case he has claims of priority over M. Massonneuve.

19. *On the use of the Chloride of Zinc in Surgical Operations and Injuries, and especially in Operations for the Removal of Cancerous Tumors.* By Campbell de Morgan, Surgeon to the Middlesex Hospital. (British and Foreign Medico-Chir. Rev., Jan., 1866.)

The general effects, which have been so immediately and universally beneficial in a large number of cases in which it has been applied, satisfy Mr. De Morgan that in the treatment of wounds, whether made in operations or accidentally, chloride of zinc is an agent of great value, well worthy of careful trial by surgeons. He uses it particularly after extirpation of malignant tumors. The strength of the solution he uses is from twenty to forty grains to the ounce of water. The whole surface of the wound should be well sponged with it. No harm comes of touching bone. The surgeon need not hesitate to apply it even to thin and delicate structures. It does not prevent healing by first intention. A wound will heal entirely in twenty-four hours when the solution has been freely used. Wounds indeed heal more rapidly after the application. Mr. De M. would have no hesitation in using it in a plastic operation. Its first effect is to stimulate the small vessels and cause a general oozing of blood from surfaces previously dry. The blood becomes pink and creamy, and on further application the whole surface becomes softened.

20. *Amputation through the Knee Joint.*

There seems to be a growing impression in favor of this operation in Great Britain, and of late years it has been quite frequently performed; four times by Mr. Lane, twice by Mr. Coulson, once by Mr. Spencer Smith, once by Mr. James Lane, once by Mr. Pollock, three times by Sir William Fergusson, with the following cases of Mr. Pollock, Mr. T. Holmes, and Mr. Cooper Forster, recorded in the London Lancet, January 13, 1866.

Mr. Pollock amputated through the knee-joint at St. Georges' Hospital, August 3d, 1865, in a woman æt. 55, for a large ulcer of the leg, from which she was evidently sinking from exhaustion, by double flap, the anterior being somewhat the larger. Patient hardly rallied. On the 6th, anterior flap looked dark colored, and was about to slough, when she sank and died.

Mr. Timothy Holmes, at the same hospital, exarticulated the leg of a boy æt. 12, September 14th, 1865, for disease of knee joint. A semilunar cut across the joint below the patella was made, and it was removed. Mr. H.'s purpose was to excise, if the case seemed suitable, but the shaft of the tibia was found extensively diseased. A catlin was substituted for the bistoury, and this was passed transversely between the femur and tibia, was made to cut its way downwards and backwards, forming a posterior flap of the tissues of the calf. A shorter anterior one was provided by the tissues in which the patella had rested. October 8th, discharged well.

Mr. Cooper Forster's operation at Guy's Hospital, was done October 10th, 1865, for a recent compound comminuted fracture of tibia and fibula of the right leg, just below the knee, in a healthy laborer. A circular cut was made around the leg, two inches below the knee, the skin and superficial layers of fat were cut through and dissected back. The tendons of the hamstring muscles were then divided about opposite the middle of the joint, the ligaments cut and the leg freed from the trunk. The patella was dissected out. Discharged November 18th, 1865.

21. *Irrigating Apparatus in the Treatment of Wounds.*

Mr. L. S. Little, in his Surgical Notes on the Campaign in Schleswig, 1864, in the "London Hospital Clinical Lectures and Reports," Vol. i., describes this instrument, in use in the Prussian army, which he thinks is "invaluable in military surgery." It consists of a cylindrical tin vessel, open at the top, holding about a quart of warm water; at the bottom is a spout, to which is attached an India-rubber tube, about thirty inches long, terminating in a zinc nozzle, with a bore about a line in diameter. When the apparatus is not in use, the nozzle is placed in a ring made for the purpose at the top of the vessel, to prevent the escape of water. The surgeon, in using the instrument, takes the nozzle in his hand, the vessel being held by an attendant, and with a continuous stream of warm water washes and cleanses the wound and surrounding parts, freeing them from accumulated pus and clots, without the application of sponges or other material. The force of the stream depends on the height at which the vessel is held, and can also be controlled by pressure on the tube. Flat pans are used to catch the water; a kidney-shaped one with round edges is most convenient, and can be applied to any part of the body. The irrigator fulfills all the purposes of a syringe, and is, through the unvarying force and duration of the stream of water, preferable to it. It can be used as a syringe for the eye, nose and ear, and for injecting the bladder, and is very inexpensive, and not liable to get out of order. The cavities of foul abscesses, and the canals made by bullets, are, with it, often advantageously cleaned. For nozzles, tubes of bone are turned of any length and diameter, with a swelling at one end for the secure attachment of the India-rubber tube. They are soaked in dilute nitric acid, which makes a pliable, yet sufficiently stiff tube to be introduced into a sinus or other cavity.

22. *Eleven Cases of Stricture of the Urethra treated successfully by Mr. Holt's Method.* (Statistical, Sanitary, and Medical Reports of the Army Medical Department, Vol. v., London, 1865.)

Staff-Surgeon T. Moorhead, M.D., gives the histories of ten cases of stricture of the urethra, which "were probably as aggravated, and of as great variety as will generally be met with, viz.: Organic, spasmodic, irritable and traumatic, complicated with fistula in perines, cystitis, hemorrhage, retention," &c., treated by the method of forcible dilatation successfully, so far as to immediate results, in the Royal Victoria Hospital, Netley.

Assistant-Surgeon C. S. Wills reports a successful case in which a No. 14 tube of Mr. Holt was thrust through the blades of the instrument forcibly. The peculiarity of this case consisted in the length, elasticity, and bulk of the cartilaginous hardness, which, despite of metallic dilators, as high as No. 7, even long retained, invariably resumed, after their withdrawal, its undiminished power of constricting pressure, preventing the passage of the urine.

23. *Case of Subglenoid Luxation of the Humerus.* By M. Broca. (L'Union Médicale, Fev. 10, 1866.)

The subject of this infrequent variety of scapulo-humeral luxation—erroneously regarded as the common form—was æt. 67. Cause not ascertained. Arm nearly at a right angle with side of chest; the humerus was rotated inwards, so that the epitrochlea was directed backwards and the bicipital groove downwards; the forearm was pronated; there was considerable subacromial depression, somewhat masked by the prominence of the deltoid, which formed a sort of bridge from the acromio-clavicular insertions to its humeral attachments, and beneath which there was a hollow. The arm was sensibly shortened. The head of the humerus was fixed in its new position, which, in relation to the muscles, was between the inferior border of the subscapularis and the triceps. Although chloroform was given, moderate traction force was necessary in the reduction.

26. *Successful Case of Amputation at the Hip Joint for Encephaloid Tumor of the Femur.* By John E. Erichsen, F.R.C.S. (London Lancet, March 3, 1866.)

This was the second time coxo-femoral disarticulation had been done at University College Hospital. The first case was in 1855 (by Mr. Erichsen), for traumatic injury of the thigh. Death in a few honrs. In the present one, the limb was previously bandaged and elevated, thus emptying the veins as far as practicable. The aorta was compressed by Lister's clamp. All the blood lost was the regurgitated flow from the tumor and limb.

Sept. 14th, 1865, Mr. T. Holmes performed this operation, at St. George's Hospital, in a female, æt. 36, for recurrent fibroid disease of thigh. Successful.

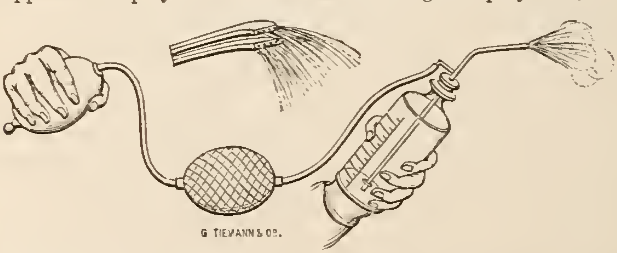
Dec. 7th, 1865, Mr. Lee, same hospital, in a male, æt. 14, for disease of hip joint and pelvis. Discharged Feb. 7th, 1866.

In the *Richmond Medical Journal,* Jan., 1866, Dr. A. M. Fauntleroy narrates a case of successful exarticulation at the hip joint, for diseased stump-bone (osteomyelitis?) following amputation of the right thigh for wound of the knee joint. The arteries were tied as they were cut. The operation was done March 15, 1865, and on the 25th April the face of the stump had entirely healed. On the 18th July the patient left for home in excellent health. Two other sneeessful coxo-femoral disarticulations in the Southern army, during the late war, are mentioned.

Local Anæsthesia by Ether-spray. By B. W. Richardson, M.D., F.R.C.P.L.

A new and ready method of producing rapid local anæsthesia has recently been proposed by the indefatigable Dr. B. W. Richardson, of London, and has been sneeessfully employed by himself and others, in a large number of minor operations. The method, as a ready means of removing pain arising from surgical operations or other causes without risk to life, is deserving of attention by the profession, the accidents from chloroform, particularly in minor operations, being on the increase. All previous attempts to use cold as an analgesic agent—Dr. James Arnott's freezing apparatus, Mr. Snow's and Sir James Y. Simpson's solid carbonic acid—were practically failures. The principle of the new anæsthetic process consists in directing on a part of the body a volatile liquid having a boiling point at or below blood heat, in a state of fine subdivision or spray, produced by the action of air on the liquid to be dispersed.

The apparatus employed is a modification of Siegle's spray-tube,[1] with the



[1] The tube differs from all other spray-tubes, in that the volatile fluid is brought up for dispersion by air pressure produced by the same motion as that which causes the dispersion.

hand-ball of Dr. Andrew Clark. With this simple means Dr. Richardson found, by the use of very pure sulphuric ether, that he could produce a degree of cold which would render the part to be operated on perfectly painless. It consists simply of a graduated bottle for holding ether; through a perforated cork a double tube is inserted, one extremity of the inner part of which goes to the bottom of the bottle. Above the cork a little tube, connected with a hand-bellows, pierces the outer part of the double tube, and communicates with the interior of the bottle by a small aperture in the outer tube. The inner tube for the delivery of the ether runs upward nearly to the extremity of the outer tube. Now, when the bellows are worked, a double current of air is produced; a down-current, descending and pressing upon the ether in the bottle, forces it upward along the inner tube; the other, or up-current, ascends through the outer tube and plays upon the column of ether escaping through the opening of the inner tube, and sends out a powerful and minute spray through the capillary end of the outer tube.

The instrument also provides a means for regulating the current of the fluid; it allows the ether to be carried along tubes of any convenient length or curve; and, lastly, it enables us to construct a *compound* instrument by which the effects may be multiplied to any reasonable extent for large operations. Dr. Richardson has, since the instrument described and figured above, made a large number of tubes to answer various powers and purposes. Among others, a tube in which there is a bulb enlargement at the end, with perforated side, or side and central jets, useful for cavities, such as the vagina or rectum, distributing the fluid in the same manner as a syringe with several perforations at its point. In practice the dispersion of the fluid from one fine tube by a series of jets is not so efficient, proportionately, as when it is delivered by one jet—the fluid requiring a certain degree of concentration to insure success. Dr. R. has constructed a very effective multiple instrument of three distinct jets, which can be moved to various angles, and can be worked with a single pair of small bellows, producing good anæthesia over a surface of the body three inches long and nearly two wide.

"When the volatile fluid," says Dr. Richardson (Med. Times and Gazette, March 10, 1866), "dispersed in the form of spray, falls on the human body, it comes with force into the most minute contact with the surface upon which it strikes. As a result there is rapid evaporation of the volatile fluid, and so great an evolution of heat force from the surface of the body struck, that the blood cannot supply the equivalent loss. The part consequently dies for the moment, and is insensible as in death; but as the *vis a tergo* of the body is unaffected, the blood, so soon as the external reducing agency is withdrawn, quickly makes its way again through the dead parts, and restoration is immediate. The extreme rapidity of the action is the cause of its safety. The process can suspend life without causing disorganization." But the effects do not end here. So soon as the skin is divided, the ether begins to exert on the nerve filaments the double action of cold and of etherization. The extreme hardness of the skin, which occurs when the freezing mixture of ice and salt is applied, does not extend deeply. The tissues remain comparatively lax, so that difficult dissections may be carried on. To prevent the smarting sometimes complained of, the tincture of iodine, as a preliminary application, is the best.

The ether to be used must be absolute, of specific gravity, 0·720, of negative effect on the tissues, and having a boiling point of 92° Fahr. All the ordinary ethers of the shops contain alcohol, whose presence materially interferes with the success of the process, preventing perfect anæsthesia, and causing tingling and burning sensation at the beginning of the process and during the brief period of reaction. A good test of the ether is, to warm the hand by gently blowing on it the breath, and when it feels as warm as the breath, make it into a cup, and pour in one or two drachms of ether. The ether ought immediately to boil briskly, without causing pain. Other fluids have been suggested—as methylic ether, amylene, monocloretted chloride of ethyle, pure chloric ether ,nitrate of ethyle, chloroform, kerolosene. A very pure hydro-carbon, obtained from paraffin (photogene oil), is next best to ether.

This process has now been successfully used in the following amongst other operations, viz.: tooth extraction, opening deep-seated abscess of thigh, passing sutures in incised or lacerated wounds, dividing sinuses, removing tumors, extirpation of eye, division of tendons, laying open joints, incising whitlow, evulsion of nails, dividing carbuncles, phymosis, removing piles, circular incision round cocyx, application of nitric acid to ulcerated surfaces, tying of nævus, amputation of finger, tenotomy, etc. Sir John Y. Simpson has done the operation of vesico-vaginal fistula with it, and Mr. Spencer Wells ovariotomy.

Narcotic spray, dispersed by this instrument, has proved to be signally serviceable in the local treatment of neuralgia, lumbago, nervous headache, spinal irritation, subacute rheumatism.

The absolute success of this process in a capital operation—that of Cæsarean section—performed on the 29th March, by Dr. Greenhalgh, is recorded in the Med. Times and Gazette, April 7. At forty-five seconds the skin insensibility was perfect, over a space two and a half inches broad, from the umbilicus to the pubis. The skin and deep layer of fat were incised at one sweep; the spray was moved in company with the knife, and the uterus was laid bare. During the time the patient reclined perfectly unconscious of the incision; she neither winced nor spoke; her countenance was perfectly placid, and her pulse underwent no variation. The operation was painless, and the action of cold checked hemorrhage; there was no shock. Quantity of ether used, six drachms. It boiled at ninety degrees.

Summary.—The titles of the following papers of general interest are given. They are not analyzed for want of space:

Successful Removal of the Uterus and both Ovaries by Abdominal Section; the Tumor, fibro-cystic, weighing thirty-seven pounds. By H. R. Storer, M.D. (Am. Jour. of the Medical Sciences, Jan., 1866.)

Five successful cases of extirpation of the uterus by purely abdominal section—one by Clay, of Manchester, one by Kœberlé, of Strasburg, one by Kimball, of Lowell, Mass., and two by Burnham, of the same place—were already recorded; to these Dr. Storer adds the sixth. All were non-malignant. The literature of the operation is fully given.

The Proofs that Lithotomy is an eminently successful operation. By Henry Thompson, Esq., F.R.C.S. (London Lancet, Jan. and Feb., 1866.)

Comparative Advantages of Pirogoff's, Syme's, and Chopart's Amputations, and Excision of the Ankle Joint, by Hancock's Method, after Gunshot Wounds and other Injuries, etc. By JAMES M. HOLLOWAY, M.D., Professor of Anatomy in the University of Louisville, Ky. (Am. Jour. of the Medical Sciences, Jan., 1866.)

It is stated by Surgeon Geo. A. Otis, U. S. V., in his Surgical Report (Circular No. 6, Nov., 1865), on the authority of Baron Von Horronitz, Surgeon-in-Chief of the Russian Marine, that Pirogoff had given up the operation known by his name, "finding the segment of the os calcis to become so frequently necrosed."

Compound Fracture of the Patella, Recovery. (London Lancet, Feb. 3, 1866.)

This is one of complete division of the patella, a little below its middle, with opening of the joint, by falling forcibly against the edge of a scythe. The limb was put up in a McIntryre's splint, and cold evaporating lotions applied. The union was by fibrous tissue at an interval of seven-eights of an inch.

Observations on Fever accompanying Surgical Affections. By H. W. GIBSON, M.D. (British and Foreign Medico-Chirurgical Review, January, 1866.)

This paper, following Billroth's researches on traumatic fever, (Archiv. für Klin. Chir. and Archiv. Gén. de Méd., 1865,) shows the importance of the indications given by the thermometer. There is a table of the corresponding urinary secretion.

The Interdental Splint. By E. N. COVEY. (Richmond Medical Journal, February, 1866.)

This splint, constructed by Dr. Bean, is made of vulcanized India-rubber, having on both horizontal surfaces cup-shaped depressions, sufficiently deep to embrace the crowns of the teeth. In its adjustment the teeth are placed in their corresponding indentations in the splint, and kept in position by the mental compress, and occipito-frontal bandage.

Amputation of Right Shoulder Joint. By W. P. MOON, M.D. (Am. Jour. of the Medical Sciences, Jan., 1866.)

Dr. M. claims the form of incision used as new. It extended from the acromion down the anterior border of the deltoid, five and a half inches in length; a transverse incision, posteriorly, was then made through the deltoid, down to the bone; after which the head of the humerus was dissected out, and the knife passed down behind the humerus close to the bone, until it reached the transverse incision; and a circular incision made through the remaining muscles.

The Sequel in some cases of Excision. By T. HOLMES, Esq. (London Lancet, Feb. 24, 1866.)

This evidence, as far as it goes, is very encouraging as respects the ultimate issue of operations for strumous disease in childhood. This series of cases is interesting, also, in showing how extremely useful are the limbs which are obtained by excision of all the large joints.

Remarks on Six Cases of Resection of the Shoulder Joint. By T. Longmore, Professor of Military Surgery at the Army Medical School. (Stat., San., and Med. Reports of the Army Medical Department, London, 1865.)

This is a very valuable memoir. The great advantage of the operation by longitudinal incision over that by a horse-shoe flap is shown and happily illustrated.

Memoir on the Treatment of recent wounds by Pneumatic Occlusion. By Dr. Jules Guerin. (Gazette Médicale de Paris, Fev. 10, 1866.

Strangulated Hernia of the Testicle through a Laceration of the Scrotum; Enlargement of the Wound; Reduction; Death. By M. Richet. (L'Union Médicale, Fev. 15. 1866.)

Application of Sutures to Bones in Recent Gunshot Fractures. By Benj. Howard, late Assist. Surgeon, U. S. A. (Extract from Medico-Chir. Transactions, Vol. xlviii., London, 1865.)

Polypus of the Vagina undergoing Cancerous Degeneration. Operation, Recurrence, Death. (L'Union Médicale, Fev. 13, 1866.)

On certain Practical Points in the Pathology and Treatment of Lateral Curvature of the Spine. By Richard Barwell. (London Lancet, Jan. 27, 1866.)

Case of Large Aneurismal Tumor in the Posterior Triangle, diagnosed by the aid of the Spygmograph. In the service of Sir Wm. Fergusson. (London Lancet, Jan. 20, 1866.)

Case of Phosphatic Calculus in the Male Bladder, with a Nucleus of Bone; probably a sequestrum detached from the Innominate Bone. By Henry Thompson, F.R.C.S. (British Medical Journal, Feb. 24, 1866.)

Cephalœtomæ in Children. By P. Guersant. (Bulletin Générale de Therapeutique Méd. et Chir., Jan., 1866.)

Chemical Galvano-Cautery. By Dr. A. Tripier. (Archives Générales, Jan., 1866.

Case of Radical Cure of Inguinal Hernia; Wire Method, with Seton through the Sac. By Mr. John Wood, of King's College Hospital, London. (London Lancet, Feb. 3, 1866.)

On Anæsthesia by Mixed Vapors. By Robert Ellis, Esq. (London Lancet, Feb. 10, 1866.)

BOOKS AND JOURNALS RECEIVED.

Transactions of the American Medical Association. Vol. xvi., 1865.

A Manual of the Principles of Surgery, Based on Pathology. For Students. By Wm. Carniff, M.D. Philadelphia, Lindsay & Blakiston.

Diarrhœa and Cholera. Their Origin, Proximate Cause, and Cure through the agency of the Nervous System, by means of Ice. By John Chapman, M.D., M.R.C.P. Philadelphia, J. B. Lippincott & Co., 1866.

Eulogy on the late Valentine Mott, M.D., LL.D. By Alfred C. Post, M.D. Delivered before the N. Y. Academy of Medicine, Nov. 27, 1865.

A Communication from the City Physicians on Asiatic Cholera. Is it a contagious Disease? Boston, 1866.

Intramular Interments in Populous Cities, and their influence upon Health and Epidemics. By John H. Rauch, M.D., of Chicago.

NEW YORK
MEDICAL JOURNAL,

A MONTHLY RECORD OF MEDICINE AND THE COLLATERAL SCIENCES.

JUNE, 1866.

ORIGINAL COMMUNICATIONS.

Historical and Bibliographical Notice of Cosmo Viardel.[1] By George T. Elliot, Jr., M.D., Professor of Obstetrics and the Diseases of Women and Children, in the Bellevue Hospital Medical College; Physician to Bellevue Hospital.

[Read before the New York Obstetrical Society.]

It is pleasant to turn from the literature of the day, and the strain after novelty, to the literature of the past; to study the musty records of cases where the fathers grappled with the difficulties that beset the practice of to-day; joyfully to recog-

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[1] Observations sur la Practique des Accouchemens Naturels, contre nature et monstreux, avec une Methode tres facile pour securir les femmes en toute sorte d'accouchemens, sans se servir de Crochets, ny d'aucun instrument, que de la seule main. * * * Ouvrage non seulement curieux, mais aussi tres necessaire et utile aux Chirurgiens et Sages Femmes qui pratiquent l'art des accouchemens. *Composé par* Cosmo Viardel, *Chirurgien ordinaire de la Reyne, demeurant rue de la Vanerie, proche la Grève. A Paris, MDCLXXI. Avec Approbation et Privilege du Roy.*

Observations on the Practice of Midwifery in Natural Labors, in preternatural cases, and in cases of monstrosity, with a very simple Method for aiding women in every kind of labor, without making use of Crochets, nor of any other instrument than the hand alone. * * * A book not only curious, but also very necessary and useful to Surgeons and Midwives who practice the art of Midwifery. *Composed by* Cosmo Viardel, *Surgeon in ordinary to the Queen, living in la Vanerie street, near la Grève.*

nize the advances of our art, and modestly to learn that professional ardor, success and invention belong not only to our time, but distinguished those who struggled in their day and generation, and left their record before preceding us to the tomb.

Moreover, the deference which these worthy men paid to their predecessors, the labor which they so cheerfully undertook in the preparation and publication of their works, and their confidence in the judgment of posterity, make it just and proper that we should, from time to time, recall their claims to our respect, as the loving hand freshens the monumental record; that we should calmly and impartially judge their many and fierce quarrels, and with "even-handed justice" seek to give to each his due.

Cosmo Viardel succeeded in achieving high position, and in identifying his name with obstetric literature. He raised his voice against the abuse of instruments, and proves himself to have been an expert practitioner; but the faults of his book have offered salient points for adverse criticism by his cotemporaries and successors, while the powerful denunciations of Mauriceau have stigmatized him as a dishonorable, intriguing and unscrupulous man. Haller says of him: "Ordinis omnis ignarus, passim superstitioni indulgens inque medicamentis plurimos;" and Sue, in his excellent work on the History of Midwifery, says that this judgment is too true to be criticized. Still, although Sue says, further on, that the book is one of the worst that is published on midwifery, he yet remarks that through its puerilities and errors there gleam some new truths and precepts.

It is obvious, therefore, that Viardel has few friends, and hence should his claims to calm, unbiased judgment be received with greater weight. The great name of Mauriceau stands always on record as his accuser, but its lustre is dimmed by the regrettable fact that the death—and, we should judge, the untimely death—of Viardel did not save him from fresh and vindictive accusations from Mauriceau. In the thirty-third chapter of his second book this author speaks of Viardel's death, and then recites a horrible case to prove "his effrontery, temerity and ignorance," though he says, at the close, that the case is "not introduced to insult the memory of the poor author (Viardel), but to let the public see how dangerous it is to trust to the vain promises of those who have no true knowledge of their art."

Peu has dealt Mauriceau a just rebuke for this conduct, in his "Reply," and has shown, in the body of his work, the true spirit of a gentleman, in reference to views of Viardel which he is justly called on to condemn. Speaking of Viardel's mistake in supposing that the presence of meconium in the passages indicated the death of the fœtus, he says: "This teaching should not be admitted in practice. He who gave it rested it on the faith of his experience, which could not have been great. I wish to believe that if death had not gotten beforehand with him, and had left him the time to acquire more, the public welfare would have led him to retract and acknowledge his error—for such is the duty of whoever undertakes to write." Having published such words as these, Maître Chirurgien Peu, ancien Prévôt et Guide des Maîtres Chirurgiens Jurés de Paris, whose much bewigged and over-anxious face looks out on you from his frontispiece, has the right to say to Francois Mauriceau, Maître ès Arts, ancien Prévôt des Maîtres Chirurgiens Jurés de la Ville de Paris, these hard words:

"When it so pleases you, you spare neither reputation nor modesty nor usages, neither individuals nor constituted bodies, neither things sacred nor profane. Let one take, for example, your thirty-third chapter of the second book in your third edition, where you treat in such a Christian manner an author already dead, or rather where you behave under the influence of a passion that you master so slightly, that dead as he is, and so recognized by you, you do not hesitate to say to him, in your magisterial way: 'Let him attentively read my book, and consider well what I have said in all my 33d chapter, &c. This is the most charitable advice which I can give him.' As if your vanity could not be satisfied by calling more than twenty times, to the tribunal of your doctrine, all the living, without still further calling on the dead." And so on, from many pages more, does the voice of Maître Peu echo down the centuries.

Though his defense of Viardel may have been prompted only by his hatred of Mauriceau, there are many things in his "Reply" which prevent the critic from trusting implicitly to the fairness and truth which may have dictated the case to which we have already alluded as published after Viardel's death.

It is evident to those who read the journals of our day that two centuries have not changed the tendencies to acrimonious debate in high places. Some future critic may reproduce the pungent words which season the controversy regarding acupressure, and recall that the leading surgeon of Scotland belittles and sneers at his colleague, and tears his pamphlets before the class; while the first obstetrician in Great Britain, laden with honors, far removed from the anxieties and disappointments of the struggling crowd below, cannot refrain from irritating his irritable colleague to the utmost by his keen, rapier-like thrusts, and classing the official hangman of Great Britain with Mr. Syme in the category of admirers of their ligatures.

Humanum est errare. The moralizing physician, pondering over his own shortcomings, may draw from these histories the comfort which the Christian draws from the truthful record of St. Peter's failings, and the lapses of the patriarchs.

Viardel recognizes the existence of his enemies in his dedicatory epistle to Mons. Felix, Conseillier du Roy en ses Conseils et premier Chirurgien de sa Majesté. He whines over M. Felix in the most cringing manner which the cringing custom permitted, "that thrift might follow fawning." He says that no one of Felix's predecessors ever equaled him, and that his successors can propose no other glory to themselves than that of imitating him; while no other worthy successor can be found than the younger Felix, etc., etc. Further on he declares that the good opinion of the public is a very small matter to him if the book should not receive Mons. Felix's approval. This indeed may be very true, since he also begs Felix to give the book his protection against the fury of those who will not spare to decry it, and who would not spare the author himself, "had he not the honor of your support, which has served him for a shield and a defense." In his preface Viardel deprecates criticism, because he is not a Maître Chirurgien, and suggests that it is not the bonnet and the robe which make the Doctor. He declares to his friend the reader (Amy Lecteur) that this little collection of cases is published by the persuasion of his friends, "seulement pour luy faire part de mon petit travail," only to communicate his little work to him; and finally, before the launch of the work, congratulates himself that he has another shield to defend him against the attacks of his enemies and the critics, in the printed approval of four of the most learned and skillful members of the Paris Faculty, who had kept the book in their possession for four months. To this Mauriceau suggests that they did nothing else with the book than keep it for four months. To show still further that he is not friendless, Viardel outdoes Peu, Mauriceau, Portal and others in the number of his prefatory epigrams, sonnets, and catrains et dizains, composed by the Surgeons in ordinary of the Queen, the Surgeon of Mademoiselle, of the late Monsieur the Duke of Orleans (who probably had leisure), of the Surgeon of Monseigneur the Duke of Orleans, of the Syndic of the Body Surgeons of the Royal Family, who caroms adroitly from Viardel on to M. Felix, and of others.

It is not the purpose of this paper to make a searching study of all the statements made by Viardel, but to glance chiefly at those of clinical and literary interest. Still we notice in passing that he believes that the male fœtus begins to move at the ninetieth day, and the female at the one hundred and twentieth; that he combats the idea that the sexes differ in their attitude in utero, of which attitude he had a good idea; and strongly advocates the doctrine that the child may live if born at the seventh or ninth month, or the tenth, but that he rarely survives at the eighth. He abuses those who differ from him, saying that they can find no other way of sustaining their opinion and bringing it to light than that of destroying and tearing that of their master (Hippocrates), "imitating, in that respect, those vipers who can neither commence their life nor enjoy the light of day, unless they tear open their mother's belly, and cause her death." He claims that in cases of twins, where both have the same sex, that they have a common placenta with separate vessels; but that where a female is co-twin with a male, they will be separated by membranes and have each a placenta, "an admirable provision of nature to inspire men from the germ with the laws and rules of chastity." A statement at variance with experience, and what might be called, in this country, "highfalutin." Monsters, according to Viardel, are due to excess, insufficiency, or admixtures of different semen within the womb. They may be due to the imagination, and he gives the case of a lady of quality who, looking attentively at the portrait of a Moor suspended over her bed, gave birth to a veritable little Moor. An explanation which would scarcely be received in the South. Finally he considers them as the punishment of God, but remarks that this explanation is not the business of the physician, and still less that of the surgeon.

Three cases of monsters are recorded which came under Viardel's observation. In one he considers that the head resembled somewhat that of a fox, and attributes it to the fascination exercised over the pregnant woman by one of the maruonettes of the Pont Neuf, dressed with a fox's head; the second case had a long cucumber-like projection growing from the back, and descending to the heels, filled with a fetid water; while the third, well formed in the limbs and body, presented enormous eyes devoid of lids, two large horns in the place of eyebrows, two others in the place of ears, and two more below these directed downward, "avec un aspect si affreux qa'il faisoit peur à voir."

Although his cross-questioning failed to supply him with an exciting cause for the deformity in these last two cases, he yet believes that they are due to impressions not remembered by the patient. Viardel's directions for the examination of the parturient woman and the general laws which should regulate a labor, are excellent for the time, and may be read with profit at present. They seem to me to be suggestive of a practice which avoided the dangers of too great rashness, but erred in recommending that a woman should be left unassisted in labor, even if it lasted four or five days, unless the labor became complicated with some accident, as convulsions, or great loss of blood. This law exposes, of necessity, the patient and the child to all the dangers from delayed, obstructed and powerless labor. In tying the cord, he advises that it be tight enough to prevent hemorrhage, but not tight enough to cause the child pain and convulsions.

The most valuable legacy which can be left to the profession by those who have not been so fortunate as to make new discoveries, is a collection of well observed and truthfully stated facts. In this respect the work of Viardel can always be read with interest. There is no more reason to doubt the accuracy of his cases than to doubt those of his cotemporaries, while some are illustrated still further by quaint remarks. The fifth chapter is devoted to the description of a case where he succeeded in dilating a vagina so contracted by callosities, resulting from cicatrices, as almost to render the walls adherent. In this case, notwithstanding that his friend the husband had been married for four months, he could barely penetrate just within the external orifice. Having previously satisfied himself that the husband was well formed, Viardel recognized the condition of the vagina, and dilated it by emollients, the introduction of the speculum matricis, and small pieces of sponge tied together so that they could be withdrawn. Conception, however, had occurred before the treatment was commenced, and the labor terminated successfully. In regard to conception occurring under such circumstances, the simple faith of Viardel presents the widest difference from the skepticism and devices recently exhibited, after two centuries, by one who has honorably identified his name with the advance of obstetric surgery. "As for the fact of conception," said Viardel, to his friend the husband, "you need not be surprised at that, since the semen is a substance so at home in the womb, that the latter draws it to itself, neither more nor less strongly than amber attracts straw and the loadstone steel; so that if the womb be well disposed, although the penis may be short, or the semen may not be ejaculated to the womb, the womb will not hesitate to advance and come forward to receive it."

In his next case, Viardel describes an arm presentation which he replaced, and finding the head above, and the pains favorable, he put the head in a favorable position, abandoned his idea of podalic version, and left the case to nature, with success. An excellent, clear headed and well managed practice. In this, as in other cases, we find him attending to the strength of his patient before delivery, and giving eggs beaten up with wine.

An interesting case of placenta prævia, with belly presentation, follows, in which he removed the placenta first, and then the dead child by podalic version. He states that he once withdrew a living child under these circumstances, which lived three days, although puny.

A case is described in which a fleshy mole, the size of the first, was mistaken by the midwife for the head, and delivered by him before the child, which latter he delivered by version, in accordance with Guillemeau's rules.

The ninth chapter is devoted to a case of supposed dropsy in a demoiselle, sent him from the country by a physician, in whom, by abdominal manipulation, he recognized a movement which, he says, "is not met with in dropsy." He took care of her subsequently in her confinement, and he states that "he does not know that this demoiselle had any bad intention; but the case may serve as a little warning to many midwives and surgeons, who might be blinded by a desire for gain in a similar chance, and do, perhaps, things which are not the duty of a Christian."

In all which M. Viardel presents himself as favorably in the nineteenth century as in the seventeenth.

Apropos of a case in which the redoubtable Mons. Felix himself sent Viardel to the wife of an officer, who had been, during eight days, kept by a midwife in the belief that she was in labor, and where there was no labor for three weeks afterward, Viardel makes some excellent remarks on the differential diagnosis of labor pains, and the disadvantage of too heady a prognosis. Passing over a case where he allowed a breech presentation to go on uninterruptedly, we come to one of face presentation, which demands my sincere admiration. Recognizing the presentation, and placing a compress over the face attached to a string for ready withdrawal, Viardel carefully depressed the chin by pressing on the face, forehead, and then the occiput, until he converted it into an occipital presentation. In a few practical remarks he states the risks from faulty diagnosis and from dislocation of the jaw by too great pressure on the jaw.

The 17th chapter describes a twin case, in which the afterbirth was so adherent that he carried a great deal of butter within the womb, and administered sternutatories. When the afterbirth came, complete inversion followed, which was at once replaced by Viardel, who describes a terrible case of the same class, where a midwife pulled on the inverted womb until the death of the mother.

In the 18th chapter he describes his examination of a woman who had died suddenly undelivered, in which he mentions the attitude of the fœtus in utero, and recognizes fluid in the bronchi and pericardium.

In the 20th chapter he gives a case of prolapse of the impregnated womb at half term, which he replaced, and kept up by a pessary. She went through her pregnancy, but the prolapse recurred when the pessary was taken out toward the close, and she demanded much care in the labor. In these cases Viardel would use a cork pessary with holes, or, after confinement, a roller left within the vagina, the hips being elevated, and subsequently astringents.

In chapter 21st, a lady of his acquaintance sent him an unmarried woman, four months pregnant, with chancres and burning during micturition, and with nocturnal pains along the arms and legs. In these cases Viardel argues in favor of baths, and a mercurial treatment at once; and after this woman had been well bathed she was salivated (flux de bouche) for a month. She recovered, and a lusty baby was born. Posterity has confirmed the principle for which he contends.

The 22d chapter describes the case of a young married woman whose husband proposed to abandon her as impenetrable. She was jaundiced and cachectic. The hymen was firm and fleshy, perforated by little holes which allowed the thinner part of the menstrual fluid to pass. (I understand that thickened, tough fluid was retained.) The hymen was incised, and a tent introduced, when the objection to the wife was removed. I attended, this winter, a confinement preceded by somewhat similar conditions.

Two cases of funis prolapse are given. Delivery was effected by version, and Viardel remarks that he has never seen a child delivered living in this complication.

The 24th chapter describes the death of a woman before delivery, where he delivered the child by Cæsarean section (during the time required for an Ave), which was baptized, and lived a half hour.

Viardel does not tell us that he himself could not therefore entirely dispense with instruments, but the success in this rare and unusual contingency is greatly to his credit.

In the 25th chapter he speaks of a case of puerperal eclampsia in a woman who had been in labor two days and two nights. These, he says, he quieted promptly by some drops of the oil of amber in wine, when he advised that she should be let alone; but he was obliged more than twenty-four hours afterward to pull the child away with his fingers in the axillæ. Gangrene of the vulva and recovery followed. Child born dead.

The uniform success which he claims in the treatment of gangrene of the parts by the remedies which he describes, may be rendered a little doubtful by the details of a remarkable case in the 26th chapter, where a woman, aged 47, illegitimately in the family way, and probably for the first time, had been eight days in labor before sending for Viardel. He found the parts narrow, the bladder and rectum so pressed on that they could not be emptied, the parietal bones squeezed together and through the scalp. He twisted off one parietal bone with his fingers, and then forcing these in he broke up the brain and then withdrew the head with his fingers under the jaw, and subsequently the body with his fingers in the axillæ.

He says that his remedies stopped the gangrene of the vulva, but that she died in three days, the afterbirth only coming away the night before. Among the remedies which he recommends for aiding the delivery of the afterbirth may be found a drachm of the powdered afterbirth of another woman.

The power of his hands, his knowledge of the fact that delivery of the afterbirth before the termination of the labor may stop hemorrhage, and his charity in consultation, are all shown in the thirty-second chapter, in a case where he was called by a midwife who had pulled away the body and left the head in utero. Viardel informed the husband, in kindness to the woman, that the child being putrid, such an accident could not have been avoided. He then introduced his hand, and finding the placenta not quite adherent, withdrew it first, in order, as he says, to stop the flow of blood. Then, promptly reintroducing his hand, while the midwife held the uterus from above, he got his fingers in the mouth and withdrew the head, "though not without great labor and much sweating." "The most beautiful and most useful of all instruments," says Viardel, "is the one which nature gave us, that is to say, the hand."

In the next case Viardel recognized a shoulder presentation, and that the child was dead. This he determined by passing his hand into the abdomen, where he found the funis flaccid, and the odor of his hands very bad. As the feet were at the top of the womb, he bethought himself that he would force his finger through the putrid abdominal wall and pull on the pubis, which he did until the feet came readily within reach, and so he delivered the child.

"Ah," says Viardel, "the first of all instruments is the hand. Nature must never be violated by superfluous and cruel instruments when all can be done with the hand alone. We are no longer in the time of the Arabs, who invented an infinite number of cruel operations, as well as instruments and machines, which often caused more fear and terror to the sick person than the sight of the torture to a criminal." After citing a case in which, under like circumstances, the head was expelled without assistance except from enemata, Viardel passes on to describe a similar case in which he introduced his hand in the womb and pierced the fontanelle with two of his fingers, after which he forced them down to the sphenoid bone as soon as he had evacuated the brain, and withdrew the head with the hand alone and the aid of sternutatories.

The length of this paper admonishes me to be brief, and I will make but two more extracts regarding the treatment of the lacerated perineum, a subject which has attracted so much attention lately, and his views of the qualifications of a surgeon-accoucheur. He describes medicated applications for slighter varieties, but if all the perineum and septum are destroyed, then he distinguishes the rest into two classes, recent and inveterate.

In the latter he refreshes the cicatrix with a bistoury very carefully, as in hare-lip, and after allowing some bleeding to take place to prevent inflammation, he then uses a twisted suture in the middle of the wound, and at the two extremities two needle points with a suture twisted above and below. He then applies lint dipped in some balm, and dresses until "the perfect cure." In a recent case, one of which is given, where he operated on the third day, he washed the wound with an astringent decoction, and then sewed it up, from the anus to the commissure, with a suture (à surget). He then ordered that the sides be held together as long as the patient or nurse could hold them, to help the reparative process, dressing it as an ordinary wound—in the case given with equal parts of turpentine and honey spread twice a day on linen. The patient should be bled if inflammation threaten, and in this way he anticipates a recovery in two weeks, as in the case narrated.

I might also cite the care which he took, by injections after difficult labor, to soothe, strengthen and cleanse the vagina, as showing that his claims for great success in curing what he calls gangrene of the parts, were not advanced without great labor on his part to attain the end; but I pass to the translation of a part of his views regarding the qualifications of a surgeon-accoucheur. "He should be well made, of middle age, both to have attained experience and to be able to support the labor and fatigue which he must undergo in his operations. He must be ambidextrous; his hands must be long and slender, and the nails well cut, so as not to injure the womb in his operations. He must be clean in his habits, but always modestly dressed, and not in too swell a manner (fanfaron), so that he may have nothing to hinder him. Moreover, he should be virtuous, prudent, wise and well up, a clear-headed man to invent methods on the spot, and to change the presentation when preternatural. He should be gentle in his language and agreeable in his conversation, so as to cheer the patient and encourage her in her suffering, treating her kindly, making her understand that she shall soon be through her troubles, and that he has only come to help and comfort her. But, above all, he must be prudent and discreet. Prudent in prognosis, foreseeing contingencies, so that he may not risk the blame of the assistants. Discreet, so as to guard the secrets confided to him. And we might add that he should know his anatomy perfectly, so as not to be deceived in his operations—as in removing the afterbirth, operating for artificial anus, dividing the frœnum, and other similar operations. In one word, he ought to be patient and charitable, above all to the poor, and not to do his work for lucre and his own profit, but, as said the apostle, for the honor and glory of God, and to preserve his reputation among men."

It seems, therefore, to the reviewer, that Viardel has shown himself to have been a practitioner of pluck, prompt in his resources, familiar with obstetric manipulations, and very skillful in their use. The simple record of his cases recounts many acts which would do credit to any member of this Society, and are specially interesting at a time when the tendencies of the day are reverting to a more liberal use of the hand in these cases. We incline to the kind and charitable judgment of Peu, rather than to the harsh and vindictive accusations of Mauriceau. If Viardel did die prematurely, then it is certain that so good an operator would otherwise have widely extended his reputation, increased his influence, and purged himself of his errors, with enlarged experience. If, indeed, his experience had really been limited, as Peu suggests, then do his qualities as a skillful operator stand in still bolder relief. At the same time, the experience of the last two centuries has still further taught us to beware of men who, by *ad captandum* titles to their works and the proclamation of extreme opinions, proclaim radical tendencies, which, in medicine, must be seasoned with a spice of charlatanry. He may, possibly, have been intriguing and slippery, and have justified, to a certain extent, the opinion of Mauriceau; he was driven, by his pledge not to use instruments, to expose himself and his patients to dangers inseparable from his false position; but he must also have avoided much of the brutality and malpraxis rife in the days when mutilating and destructive instruments were rashly, unwisely and unskillfully used by the great number of those in practice; and he may have been sustained by the conviction that he was heartily laboring to reach his own ideal, and stem a tide of errors which bore in its depths evidences of evil doing better known to him, perhaps, than we can even now surmise.

On Excision of the Superior Maxilla; Report of a Case, with Remarks on certain Tumors of this Bone. By WM. R. WHITEHEAD, M.D. (Univ. of Paris), formerly Professor of Clinical Medicine in the New York Medical College, etc., etc.

Much discussion, sometimes unnecessarily, engages the attention of the medical public on questions of priority of certain operations. No achievement more brilliant, and that has signalized the progressive march of operative surgery, has a better claim to attention than the excision of the upper jaw, though, at present, not a very rare operation. Ferguson, whose operative dexterity and skilled experience are well known, asserts that "of all innovations, the operations for the removal of tumors of the jaws have created the greatest impression on his mind." Many others have eloquently testified to their recognition of the just claims of this conquest of modern surgery; and I maintain that the distinction awarded for the conception of a bold and successful operative procedure should be adjudged to the surgeon who most consistently, with recorded facts, merits that distinction.

It has been stated that to Dr. Horatio G. Jameson is due the credit for having been the first to extirpate the entire superior maxilla. Jameson did not practice even a partial excision of this bone, as a careful perusal of the case, to which reference has been made, will exhibit, and which is published in the fourth volume of the American Medical Recorder, for 1820.

The operation which Jameson performed, as the history of the case exposes, was for an immense tumor which commenced from the gum, extended to the palate, and protruded from the mouth —resembling, from the description, a form of epulis, which Ambroise Paré described in 1628 (Œuvres, page 291), and which he removed by successive operations and cauterizations, and probably belonged to one of those forms of tumors usually benignant and histologically characterized by the presence of elements known as the myeloplaxes, or the multi-nucleated lamellæ, discovered and made known by Robin in 1849; nor am I inclined to accord more faith to the statement that has been made that Alcoluthus, in 1693, removed this bone. Jameson's operation consisted in transpiercing and dissecting the growth from the maxilla and immediately contiguous soft parts, and, in its removal, pieces of the alveolar processes were detached with it. As he states, his incisions were not carried so high up as the bottom of the antrum. He makes no mention of having used saws, chisels, or bone forceps, and as further proof, several weeks after the operation, by a few circumscribed applications of caustic, he opened the cavity of the antrum to discover if the disease extended to it, and he found it healthy. Certainly this does not look like excision of the superior maxilla.

But to Dr. David L. Rogers, of New York, is due the priority, as is shown in the report of a case of partial excision of this bone for tumor, recorded in the New York Medical and Physical Journal, Vol. iii., 1824. After extracting two molar teeth, he circumscribed the tumor by sawing the maxillary bone and its palate process, and joining the incision by another at right angles; and as he distinctly states, removed the two inferior turbinated bones, a part of the septum narium, the vomer and part of the antrum. Thus he seems to have complied with the requirements of the disease, and did not remove the entire bone, as Gensoul recommended and several times unnecessarily practiced, as well as many other surgeons, but which is at present a well established surgical doctrine to remove only so much as is diseased, leaving the sound tissues—and if the growth is one of those rapidly recurring malignant tumors, the least surgical interference the better. Happily such, however, are comparatively rare. It is to be regretted that the case reported by Rogers is wanting in details and precision of description; and thus we observe that it was reserved for Lizars and Gensoul, who, at a later period, subjected the operation to well defined procedures, to bear off the palm of priority, though justly due to Rogers. Since then, Stevens, Mott, Mütter, Warren, Horner, and many others, have performed this operation, with more or less modification in the operative details, not to speak of surgeons in other countries. It is of paramount importance, however, to study the various morbid growths which, for their removal, require the excision of this bone, and below is the report of a case in which I had occasion to resort to this operation.

CASE. *Tumor of the Superior Maxilla.*—A negro girl, age twelve, living six or eight miles from the village of Anderson Court House, South Carolina, was troubled with a tumor occupying the superior maxilla. I was consulted by her attendant physician, Dr. P. A. Willhite, of Anderson, and my opinion requested concerning the nature of this growth and the propriety of its removal by excision of the upper jaw. The girl was well developed, rather above the medium size and height, and presented appearances of the most excellent general health. On inquiring into the history of the case the following information was elicited: When about three years of age a tumor, occupying the region of the upper jaw of the right side, was observed, which gradually enlarged until about the time she attained the age of nine, when she came under treatment, which consisted of local applications of one of the preparations of iodine, and the administration of iodide of potassium internally. The treatment was continued from six to eight months, with apparently some diminution in the size of the tumor. It afterward, however, continued to increase, and twelve months previous to being consulted in the matter no further interference with it had been attempted, with the exception of a puncture of the mass through one of the alveolar cavities with a view of determining its consistency, a bicuspid tooth being extracted for that purpose. The result of that puncture established the solid character of the tumor.

My notes furnish me with the following information of her condition at my first examination.

Examination of the Patient.—The girl is hideously deformed by a tumor, occupying the right superior maxilla, greatly distending the cheek, forcibly drawing the mouth upward and outward, distorting and preventing its complete closure, and permitting, from its semi-closed condition, to observe a portion of the tumor occupying the anterior part of the superior maxilla; the nostril of the right side is partially effaced by being elevated and pushed forward and outward; the eye of that side is partially concealed by the very great distension of the cheek, though the lower rim of the orbit is perfectly free from the tumor, and its well defined limits in this region are plainly perceptible to the touch. As I have already stated, the growth occupies the right superior maxilla, and it depresses the roof of the mouth of that side—projecting toward the mesial line, pushing the vomer to the left side—extending externally and inferiorly, the lower part of the growth projects below the line of the molar teeth. All of the teeth of the affected side are present except two that have been extracted; they are sound and firm. By passing the finger behind the alveolar arch the tumor is found to make considerable projection, though well circumscribed, and it is hard and resisting to the touch. Externally, and in that part of the tumor occupying the roof of the mouth, it is slightly and superficially lobed. To the touch generally it is hard and resisting; in some points there is a certain degree of elasticity to the touch, but nothing like softness in any part of it, and unattended with any sensation of yielding or crepitation. The surface of the tumor is irregularly smooth in every part accessible to the touch. There are no large veins on the tumor, and there are no engorged ganglions in the parotid region.

The growth has increased slowly and very gradually until within the last six or eight months, since which period its increase has been much more rapid. It has never been painful, and the patient complains only of inconvenience and discomfort, to which must be added the fear of its further and rapid increase, and the hideous deformity it occasions. It made its appearance without any apparent cause, and I should also state that the girl was born of healthy parents, in whom no similar growths have ever been observed. The voice is strongly nasal and indistinct. Mastication is embarrassed and the imbibition of liquids rendered difficult from the distortion of the lips.

The sketch, Fig. 1, which has been since reproduced and retouched, offers an excellent representation of the appearances of the girl such as she presented upon my first examination of her, and is a pretty good preservation of her features.

Undecided as to the character of this morbid growth, but balancing in my mind the probabilities of its histological elements being homomorphous, and belonging to the class of homologous tissues, fluctuating between the fibro-plastic, fibrous and osteo-fibrous growths, I inclined toward the opinion that it was an osteo-fibrous tumor. In the study of its clinical characters, I observed that it presented none of the features of tumors designated malignant. Fearing, however, that it might ultimately take another character much to be dreaded—in other words, that it might degenerate, and observing that, at the time, it was limited and apparently well defined—fearing its further increase, and considering the general good health of the girl, with the consent and approval of the parties concerned, I determined to remove it by excision of the superior maxilla.

Fig 1

Before proceeding to operate, I caused a puncture of the tumor to be made in my presence, and the result of that exploration entirely confirmed the opinion conceived of the solid character of the growth, established by the puncture made several months previously. I deemed this precaution necessary, as a mistake in diagnosis of such tumors may occur to the most prudent surgeons—recollecting the experience of Gensoul, who, notwithstanding his judgment and skill as a surgeon, commenced a resection of the upper jaw, when he discovered that he had before him a sinus distended with fluid instead of a solid tumor.

Thoroughly convinced, then, of the necessity of the operation, on the fifth of April, 1865, in the presence of and assisted by

Drs. Wilhite, Rutledge, Borland and others, I proceeded to effect the excision of the tumor.

Through the kindness of Dr. Patrick, a distinguished dentist of Charleston, S. C., then residing at Anderson, I was provided with a dentist's chair, which afforded me greater facility and ease in operating on the part. I caused a small charcoal furnace to be prepared, in which cauteries were kept in readiness to be used in the event of hemorrhage from the deep structures inaccessible to ligatures, after the wrenching out of the tumor. Being imperfectly provided with instruments, I did not possess nor could I obtain a pair of bone pliers, which, however, I did not regret, as the result justified, and I am more thoroughly convinced that the chain saw of which I made use possesses many advantages which render it a most desirable instrument in such an operation. I had previously caused to be manufactured, by a gunsmith, a small, narrow, straight saw, which greatly facilitated the section of the superior maxilla and the malar bone.

The Operation.—Chloroform being administered, the first incisor on the opposite side being extracted, and the patient placed conveniently and her head supported and firmly held by an aid, I made a curved incision which extended from the lip, at a point a little above the angle of the mouth, to a point corresponding to the middle of the malar bone.

Hemorrhage from the facial artery occurring was controlled momentarily by pressure on the cut surfaces with the fingers; becoming troublesome, it was arrested by a ligature placed on each end of the divided artery. I then dissected the tumor in the direction of the nasal branch of the superior maxillary bone, along the lower rim of the orbit, taking pains to divide the suborbital nerve at the point where, after emerging from the suborbital canal, it forms a kind of meshy-like anastomosis with the facial nerve; this effected, the exalted sensibility, notwithstanding the chloroform, ceased to be any longer evinced by contortions of that side of the face. I continued my dissection on the malar branch of the superior maxilla and on the malar bone. Having thus circumscribed the tumor in its superior and anterior portions, and observing that it did not extend quite up to the nasal bone, with the perforator of a straight trocar I effected an opening through the os onguis, and the trocar being withdrawn, I succeeded, after some trouble, in passing the canula of a Belloq's sound in its place, and through the canula I passed a piece of wire perforated at its extremity and threaded with silk, to which last was attached a chain saw. The trouble that I experienced at this stage of the operation resulted from not having at my disposal a suitable curved trocar for perforating the os onguis. The chain saw, however, being passed and properly adjusted, I cut the nasal process of the superior maxilla. (See Fig. 2, A, A.) The head

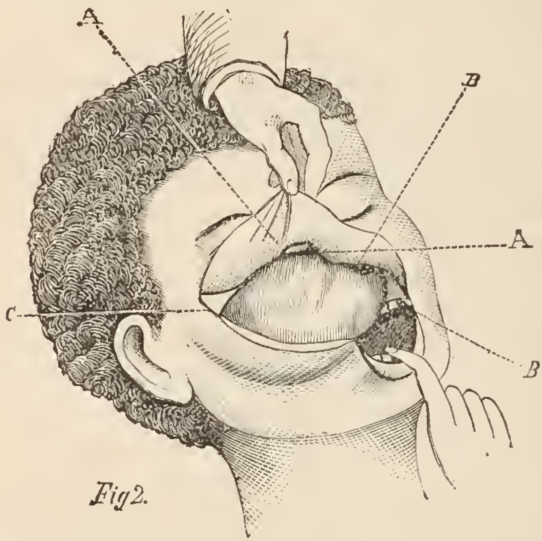

Fig 2.

forcibly extended, and the lower jaw depressed by the finger of an aid, I made an incision, with a sharp pointed bistoury, transversely across the palate arch, extending from the middle palatine suture along the posterior border of the palate bone to the extremity of the alveolar arch; I made another incision at right angles to this along the middle palatine suture of the maxillary bone and terminating at the alveola, from which the incisor had been extracted to permit the free action of the chain saw. I then introduced the Belloq canula containing a threaded wire in the anterior opening of the nasal fossa of the right side, and sliding its curved extremity along the floor of the nasal fossa, caused it to enter the cavity of the mouth at the opening made by the incision which detached the soft palate from the posterior border of the palate bone. The thread was seized and attached to the chain saw, which being passed and adjusted, permitted me to effect very easily the section of the bone in this part. (See Fig. 2, B, B.) With the small, narrow straight saw of which I have already spoken, I cut the superior maxilla and malar bone in a line nearly horizontal and parallel with the inferior border of the orbit, immediately below the external opening of the suborbital canal. Fig. 2, C indicates the malar bone. Then with a pair of strong forceps I seized the tumor firmly, and alternately depressing and elevating the handle of the instrument with a slightly twisting movement, after a few efforts I succeeded in separating the tumor, and a few incisions of the adjacent soft parts permitted it to be entirely detached.

No hemorrhage occurred after the removal of the mass, and the immense cavity which remained was washed with a weak solution of muriated tincture of iron, and exposed to the air for about three quarters of an hour, before proceeding to place the sutures and dress the wound. The patient was most of the time partially under the influence of chloroform; she supported the operation with courage, and her condition after it was excellent.

Five twisted sutures approximated the cut surfaces of the cheek, and a light, simple bandage was applied. No lint or any thing else was stuffed into the cavity left after removal of the tumor; she was put to bed; an astringent wash of the muriated tincture of iron recommended during the first few hours, and half a grain of sulphate of morphia ordered for the night.

April 6th. Passed the night quite comfortably—complains of slight headache—the pulse is a little frequent—patient swallows pretty well; there is no regurgitation of liquids into the nasal fossæ; ordered chicken soup.

April 7th. Rested well during the night; is able to sit up and walk about the room; gargles with Darby's solution (solution containing chlorine). Ordered chicken soup and milk.

April 8th. Was removed to her home, several miles in the country.

April 9th. Attended her in company with the family physician: general condition excellent, her appetite good, swallows well, is cheerful; continued Darby's solution, and recom mended creosote water to be used in place of it the next day.

April 11th. Continues to improve; can pronounce distinctly a few words, but requiring effort to do so. Same prescriptions as previous day. In the course of the next few days all the pins were removed and the union found complete in the entire extent of the incision. The cheek is well supported and the deformity very slight for such an operation. The engraver should have represented a slight cicatrix of the cheek, but it is not very apparent—indeed it is not so much as it usually is after the most perfect union. Fig. 3 exhibits her appearance

Fig 3

after the removal of the sutures. There is observed, however, a flatness of the right cheek; otherwise her appearance is decidedly improved. I did not again see her, but in less than thirty days she was entirely well and at work on the farm where she lives. About six weeks ago I received from the family physician a letter stating that he saw her last fall, which was six months after the operation, and that he had not seen her since; but at that time the cavity had contracted, and from an external view it was almost impossible to tell that any operation had been practiced on the upper jaw. Consequently there has been no tendency to recurrence of the growth.

Examination of the Tumor.—Immediately after its removal, the tumor offered the following characters on examination:

irregularly ovoid, was solid, hard and resisting. The cut surface presented the appearance of a rather bright reddish mass, thickly studded with small irregularly shaped cavities of different sizes. The osseous element appeared to enter largely into the composition of the growth. It was not weighed, but, as near as I can recollect, it must have weighed at the time of its removal at least a third of a pound—very probably more. Circumstances did not at that time permit of the microscopic examination of the elements composing it. However, it was placed in alcohol, and a few weeks ago forwarded to me at New York in the dried state, with the explanation that the jar containing it had been broken and the alcohol was not renewed. The specimen, as it appears at present, though compact, firm and resisting as bone, is quite light, and diminished to one half of its original size. The cut surface is smooth and white. A small piece of the tumor having been macerated a few hours in water, I selected from it a specimen which I placed on the glass of the microscope, and adding a drop of acetic acid, I observed the following appearances: irregular masses composed of numerous finely granular bodies, variously agglomerated, of different sizes and shapes; some irregularly oval, others triangular or quadrilateral, but all more or less compactly massed, and mixed with granular matter.

Dr. Gonzales Echeverria, whose skill in histological researches is well known, was so kind as to examine a portion of the tumor, and he expressed the opinion that the osseous tissue has undergone hypertrophy, and is invaded by a very fine granular matter, which he takes to be calcareous, and masking the osseous lacunæ.

I propose, in a subsequent article, to remark upon certain tumors occupying this bone.

External Strabismus of Four Lines corrected by One Operation; Patient Myopic. By O. D. POMEROY, M.D., of New York.

Mrs. Donaldson, native of Scotland, aged 40, a bookfolder by trade, on 14th of June applied to me for a squint in her left eye, which had been present since her earliest recollections. It had never squinted less than at present (about four lines), which, as may well be supposed, produced a very unsightly appearance. There appeared to be a sufficiency of convergent power to enable her to bring the eye to the middle line when assisted by the other eye; but alone, it hardly reached that point.

Vision was too poor to read even the largest type; but a concave glass of 30 inch focus rendered objects a little more distinct.

The other eye admitted of almost normal vision with concave 30. Both eyes have congested fundi with altered disks. The right eye has a slight posterior staphyloma.

On the 16th of June I divided the external rectus of the squinting eye through a horizontal wound of the conjunctiva; the muscle was thoroughly divided, but was not detached from the surrounding connective tissue more than could be avoided, as there was some prominence of the eyeball, and it was feared that excessive retraction of the muscle within the ocular capsule might produce a bulging of the eye.

The internal rectus was divided through a large vertical wound of the conjunctiva (about 3 or 4 lines from the margin of the cornea, the point of insertion of the tendon), and extensively separated from the globe. The tendon of the muscle was allowed to remain in contact externally with the subconjunctiveal connective tissue, in order to strengthen the new attachment of the tendon to the globe.

About four or five lines of tendon, fascia and conjunctiva were removed by the scissors, the whole being closed by three sutures, care being taken to pass one or more sutures through the tendon of the muscle. The eye now converged about a line; but knowing the difficulty of correcting a divergent squint, I had no fear but that it would return to at least its proper position. The treatment consisted in a compress bandage for the first twenty four hours, followed by cold water dressings. In forty-eight hours two of the sutures were removed, and on the following day the remaining one had sloughed away. The reaction was very moderate.

By the 8th of July the eye had become perfectly straight and the inflammation had subsided. Patient affirms that she can see better; if so, it is probably due to the fact of now seeing with both eyes at once, which she did not do before.

The movements of the squinting eye are almost as free as those of the other. The divergent power of the eye is not quite equal to the convergent. At the present time (May, 1866) the eye diverges a very little, although the patient and her friends are unable to detect any thing amiss.

The internal rectus is a little stronger than the external. I report this case partly to show the comparative simplicity of the operation for correcting a divergent squint. In the directions for this class of operations we observe that it is essential to find and bring forward the tendon of the internal rectus; this is not always easy to be done, and certainly will puzzle the inexperienced operator. In the present operation it will be seen that the whole of the tissue upon the tendon of the muscle is brought forward, partly as it is difficult to separate the tendon of the muscle from its surroundings, and partly, as has been before hinted, to strengthen the new attachment of the muscle—that is, in its new position the tendon is held in place not only by its insertion to the globe, but also by its attachment to the fascia resting upon itself. The cause of the squint in this case is probably due to the myopia. It would not, however, alter the pertinency of these remarks if the cause were otherwise, unless it be from a former operation, in which the muscle was divided so far back as to retract entirely from all connection with the anterior portion of the globe.

Such a case, however, would hardly be worthy an operative procedure.

Lectures on the Treatment of Nervous Disorders by the Application of the Constant Galvanic Current. Delivered at the Hospital of La Charité, Paris. By Dr. ROBERT REMAK, Professor Extraordinary of the Medical Faculty, University of Berlin.

I came to Paris to demonstrate, by means of the apparatus before you, the physiological and therapeutical effects of the *constant* galvanic current upon the human body, both in a state of health and of disease. My experiments have, as you know, been submitted to the Academy of Sciences and the Academy of Medicine; and it was for the purpose of elucidating the subject before the several committees that I undertook the treatment of certain patients in this hospital. As you will wish to understand fully what you are to be told and to be shown, a few preliminary remarks are necessary.

Do not expect a long history of Medical Electricity. I shall confine myself to reminding you that friction-electricity has been used in the treatment of disease, from its discovery, and that we have, especially in France, a number of works, cited in the Treatise of M. Alfred Becquerel, relating to its employment as a remedial measure. Unfortunately, these works do not teach us much, for their authors had neither the physical nor pathological knowledge necessary to the methodical employment of electricity; and, besides, the cases in which they resorted to it were desperate and often incurable.

It was not until after the discovery of the *pile* by Volta that the attention of physicians and scientific men was seriously directed towards electro-therapeutics, and to give you an idea of the hopes that were then entertained respecting it, it will be sufficient to remind you that the Consul Bonaparte remained standing during the reading of the celebrated memoir of Volta at the Institute in 1800—a memoir which contained the first scientific indications of the therapeutic application of galvanism. Later, the physicians of different countries tried its effects, and Volta himself the first upon deaf mutes. The failure of these attempts was not alone due to the bad selection of cases, and the want of adequate physiological knowledge, but chiefly to the *inconstancy and the short duration of the current furnished by the Voltaic pile.* As the actual identity of galvanism and friction-electricity became acknowledged, it was believed that galvanism could be passed over, and friction-electricity, which had been for a long period in general repute, be made to take its place.

In 1830, Becquerel discovered the means by which a constant Voltaic current could be produced. The attention of philosophers, at this time, was unfortunately occupied in another direction; it was absorbed by the labors of Œrsted and Faraday, the discoverers of *induction currents;* the first, as you know, of the magneto-electric, and the second of the galvano-electric currents. These discoveries gave rise to the construction of rotatory and induction machines, which physicians have used to this time, thinking that it was a matter of indifference whether electricity was disengaged by one process or another. Such was the condition of things when, in 1855, in studying the effects of the different electrical currents upon the human body in health and in disease, I learned to appreciate that the value of the constant galvanic current in the treatment of diseases was incomparably superior to that of all other electrical currents, and that in the majority of cases where the constant current has a happy influence, induction currents are rather harmful than useful. This is a demonstrated fact to-day, at least in Germany; and I venture to believe, after the proofs I shall be able to give, you will be convinced, with me, that the constant current has an action much more intense, and much more beneficial than other currents, and that it owes this remedial superiority to the facility by which a *large quantity* of electricity is introduced into the body without shock or pain.

I begin with a description of the instruments I use. My apparatus is composed of a strong wooden box, which can be carried on a hand-cart, and contains thirty-two elements, each weighing eight pounds. The box is closed on the top by a lid, upon which are placed three small pieces of mechanism, each distinct from the other, and all three corresponding with the current. The first, called an *elector*, is a vertical plate of wood, upon which are fixed metallic buttons corresponding to the elements of the pile. A sort of *wrench*, also metallic, moves on these buttons, and by means of a peculiar arrangement collects the current furnished by a given number of elements—not numbering, be it understood, beyond thirty-two. In the case where thirty elements are not sufficient, more elements are placed in additional boxes, and they can readily be connected with the others. The second is a *galvanoscope*, which indicates the approximate intensity of the current. The third one consists of a *commutator* or key-board, a current-changer, serving to vary, as may be wished, the direction of the current.

It is proper that I should tell you how the Voltaic elements I use are composed. I employed at first the elements of Daniell, which furnished a more constant current than those of Grove or Bunsen, but which had the inconvenience of requiring cleaning every day, on account of the cupreous deposit which accumulated on the surface of the porous cylinder, from endosmosis between two liquids of different densities. To diminish this endosmotic action, MM. Siemens and Helske, skillful makers of telegraphic apparatus at Berlin, conceived the idea of putting the copper-plate below the cylinder of zinc, separating them by a pipe-clay diaphragm, which is covered with a thick layer of papier-maché. As the denser fluid, the solution of sulphate of copper is interior to the pipe-clay diaphragm, below the papier-maché which supports the cylinder of zinc, the endosmotic decomposition is greatly diminished, and, in consequence, the duration of the current produced by this element is truly astonishing, provided from time to time you add crystals of the sulphate of copper and water. From 1859 to 1861, the first period I made use of this machine, I had it cleaned about every three months; but of late years I have satisfied myself that it will work during six months without the current sensibly losing its intensity.

In the application of the current to the surface of the body I use, in most cases, metallic electrodes covered with muslin or wool, moistened with water, which communicate with the conducting rods by a bundle of silver wires, with gutta-percha or caoutchouc envelopes. The surface of these tampons varies in size according to the part of the body to which it is to be applied; but I prefer it to be as broad as circumstances will permit, because the introduction of a great quantity of electricity is generally required.

II.

I pass now to a sketch of the general and local effects of the constant current.

The general effects, from the prolonged application of the constant current, consist in an increase of the animal heat of the body, in subsequent sweating, and, very often, in prolonged sleep, followed by a species of repose of the whole body.

The local effects are very various. The most curious are certainly the effects upon the nerves of sensation, and which are not produced by the induction current. In touching, for example, the temple, forehead or cheek with electrodes carrying a very feeble current, and causing no sensation upon the skin, you produce peculiar flashes—photopsia—resembling a radiated spot, imitating, to a certain extent, the structure of the retina. You witness the same phenomena in applying the electrodes upon any part of the head, or even the neck, as low down as the fifth cervical vertebra, which is ordinarily the limit of the region where this excitement of the retina can be caused.

The sense of taste is excited by a process identical with that which excites the sense of vision. In point of fact, taste is stimulated by touching with the electrodes certain points upon the face, and particularly on the nucha. This galvanic taste is very marked; some find it acid, some bitter, others styptic. It is felt not only in the tongue, but in the palate, in the gums, and even in the œsophagus. It often happens that the limits of the points of the spinal marrow, where the sense of taste can be determined, exceed the limits of the fifth cervical vertebra, and are extended sometimes to the lumbar region, and even into the legs. It can thus be ascertained that the local and circumscribed application of the current upon a portion of the body exercises not only a limited action between the two poles, but that the electric current moving out of its direct way can penetrate even to the depths of the organism, and reach the nervous centres. This explains many unexpected phenomena, which we sometimes observe in the treatment of nervous diseases by galvanism, especially in very sensitive persons. As to the sense of hearing, it is very difficult to produce any influence upon it in the healthy man; but strange to say, in the deaf, and particularly amongst those whose deafness is connected with the nervous system, the excitability of the acoustic nerve is so great that the least application of the constant current upon the os petrosum will produce sounds, and sometimes awaken, but vainly, the hopes of cure.

As to the electrodes, you should know that the retina is more sensitive to the negative pole, and the gustatory nerve to the positive pole. The auditory nerve is more sensitive at the opening of the circuit than at the closing of it; it behaves like a nerve of sensation. In deafness, proceeding from the nervous centres, you will find that one of the two electrodes produces crossed effects, after the manner of the crossed reflex contractions that I have remarked in progressive muscular atrophy, and in other diseases of the spinal cord.

An interesting effect of the constant current is a species of vertigo, or rather loss of the equilibrium of the body, which happens when the current acts upon a very limited given point —for example, the auriculo-maxillary fossa. Sometimes this point of vertigo will be found in the carotid fossa, near the angle of the jaw. I believe that this phenomenon can be explained by a change in the equilibrium between the two halves of the cerebellum, a change caused by the excitation of several filaments proceeding from the superior cervical ganglion of the great sympathetic, and which come into direct communication with the cellular ganglia of the nervous centres.

With regard to the action of the constant current upon the sensory and motor nerves, my experiments upon the human body in health and the human body in disease, confirm, in general, the law found by Marianini in the living frog. This law may be thus stated: a down-running current acts more energetically upon the nerves of sensation, and an up-running current upon the nerves of motion; the first at the point of exit, the second at the point of entrance. I ought to add, however, that when you cause the action of the current to be *unipolar*—that is to say, applying one electrode upon a single point of the nerve, and the other upon some point of the body—you will observe that the positive pole exercises nearly the same influence upon the sensory nerves as upon the motor nerves—an influence identical with the action of the down-running current; and that the negative pole exercises an influence identical with the action of the ascending current.

I will terminate these theoretical explanations by an experiment which will show this *unipolar* action. I place now the positive electrode of a current of from twenty-five to thirty elements upon the median nerve of the arm of this man, and the negative electrode upon the radial nerve of the same arm.

Now, in closing the circuit, you see a contraction much stronger on the side of the negative pole, that is to say, of the flexors; as soon as I change the direction of the current, the contraction becomes stronger on the side of the extensors. This experiment, which is painless, can be repeated as often as desirable, and the same phenomena will always be reproduced. Notice also that the two electrodes act each one differently upon the blood vessels. The positive pole dilates them, and makes the skin red; whilst the negative pole develops the contrary effect after a continuous action of five to ten minutes. You notice, also, at the positive pole, a depression of the skin, and at the negative pole a swelling of the epidermis and derm. I shall dwell upon these phenomena more hereafter.

Such are the results which I arrived at by experimenting upon myself, and upon other healthy persons, from the 13th December, 1855, to the 18th July, 1859, before attempting the therapeutical applications of the constant current. I recommend you to follow the same course, and not to practice electro-therapeutics until you have frequently repeated these preliminary experiments.

III.

Allow me, before proceeding further, to mention an important point—the distinction between the constant current and the continuous current. In France these terms are indifferently used, but they correspond to very different effects. The Voltaic pile and the chains, which are its immediate modification, give a continuous current which, under certain conditions, may, after the law of Ohm, if the resistence of the conducting body is considerable, resemble the constant current. But if the resistance diminishes by the effect of the current itself which softens the skin, the inconstancy of the pile will manifest itself by very notable oscillations, influencing not only the galvanoscope, but the nervous system. In this case the current will be always continuous, but not constant; that is to say, it will become weaker by degrees, by reason of the diminution of the electro-motor force of the metallic plates, until finally it finishes by becoming null, and that, too, in a short space of time. The constant current, on the contrary, lasts for a long time without losing its intensity, even if the resistance is very feeble. The application of the constant current is not always made by immovable contact of the electrodes and the skin; it can be made by passing the electrodes over the surface of the body, without removing them; that is to say, without interruption in their passage. I call the first method, *application of the current in repose* (stabile ströme); and the second, *application of the current in motion* (labile ströme). There is an apparent contradiction between the terms, constant current, and current in motion, seeing that motion has not constancy as a property; but that does not matter; what is essential, is an apparatus whose current is constant so long as the resistance is the same. Evidently, if the resistance change, the current is really no longer constant.

Let us finish what is to be said respecting the visible effects of the electrodes upon the skin. At the negative pole, rather than at the positive pole, a papillary and urticarious eruption is produced, which is sometimes extremely sensitive, and may, after a prolonged application of the current, become filled with a sub-epithelial fluid, and very soon become a brown eschar; this is detached very slowly from the skin, sometimes after three months, from within outwards, in the form of a patch, without suppuration when not irritated or moistened and without leaving any trace upon the skin. By this you will comprehend how important it is to distinguish the action of the two poles, on account of what I call the *catalytic* effects of the current—that is to say, relating to the treatment of the disorders of the circulation, of infiltrations, of hardening of tissues, in a word, of all the pathological states designated under the name inflammatory. As in these cases there is always a constriction of the arterial and lymphatic vessels, you will understand that you should use the positive pole to produce a favorable effect, the more so as it quiets the exalted sensibility of the affected nerves.

After this digression I will pass to the general therapeutic effects of the constant current. Among these effects it is important to distinguish those caused by the current in repose from those caused by the current in motion. The current in repose is recognized by the immovability of the needle of the galvanoscope when the circuit is closed by the medium of the human body; and the current in motion, by the oscillations of this needle under the same circumstances. The current in repose is produced, I repeat, when the electrodes are held immovably upon the surface of the body; and the current in motion, by making them glide over this surface, without interruption of communication.

In general the action of the current in repose is calming, and that of the current in motion exciting. Yet, in cases of severe paralysis, the current in repose, when its action is not too prolonged, produces an anti-paralytic effect more energetic than the current in motion. Not only interruptions, but even too strong oscillations of the current are, in such cases, more harmful than useful. It may be stated that, generally, interruptions of the constant current weaken it, and only produce a good effect in the local treatment of contracted muscles; for they become relaxed only when the central cause of the contraction has already been removed by appropriate treatment. The induced current, in spite of the strong contractions it causes, does not produce the curative effect of the interrupted constant current, because it does not permit the excitation, by means of a closed circuit, of the motor-nervous fibres, nor bring on the swelling of the muscles I shall speak of presently.

It is the more important to insist upon this soothing influence of the constant current, which is a very interesting therapeutic fact, as it is produced by very feeble currents, and causes no impression upon the skin. I ought to add that, agreeably to my experience, for the constant current to be soothing it should be weak and not painful, for pain causes involuntary movements which may disturb the constancy of its action.

The soothing effect of the constant current differs from that following the use of other sedatives. Opium, morphia, belladonna, calm and are of easy administration; so that it is better to have recourse to them than to electricity. But when these remedies do not promptly bring relief, and when it becomes necessary to continue their use for some time, they greatly weaken the nervous system, and in such cases it is better to resort to electricity, which, skillfully applied, both soothes and stimulates.

The soothing effect of the constant current is produced under very different circumstances. One of the most frequent, and where the result is very striking, is where the object is to destroy the exaggerated sensibility of a part, the result of inflammation. If in such cases we apply a positive electrode, of sufficient surface, upon the painful part, and the negative electrode upon some distant part of the body—electrodes of a pile from fifteen to twenty-five elements, according to the resistance of the skin—and maintain them strongly pressed on the skin, so that the needle of the galvanoscope will not change position or go beyond twenty degrees, we shall find, after five to twenty minutes, the sensibility of the painful part much diminished. The surest and most convenient curative means, even in cases of severe inflammation, where the slightest touch of the affected parts causes exquisite pain, is to place the positive electrode upon some point of the trunk of the nerve whose branches are distributed to the painful parts, but very remote from them, and the negative upon any point whatever. For example, in a painful inflammation of the articulation of the elbow or of the hand, we place the positive pole upon the brachial plexus, and the negative somewhere on the scapula, and in a few minutes we will find the exaggerated sensibility diminish. I recommend this method because it nearly always succeeds. I have made the application before MM. Cl. Bernard, Velpeau, and Beau, upon a man who, ten days before, had fallen on his right knee, since which time excessive sensibility had been developed at the internal border of the patella. This hyperæsthesia hindered the patient from walking without bending his knee, and had resisted ordinary treatment. I put the positive electrode upon the crural nerve, at its point of exit below Poupart's ligament, and the negative electrode upon the extensor muscle of the leg, somewhat enfeebled and emaciated by the unnatural gait which had become habitual. After some minutes we found that the joint was much less painful, and, in consequence, that both extension of the leg and walking were easier. On the repetition, three times, of this treatment, a complete cure followed.

The most curious anti-neuralgic effect of the constant current is that which results from its direct application upon certain points of the nervous centres without, apparently, regard to any relation between these points and the part of the limbs affected with neuralgia. To give an idea of these effects, I will mention the case of a lady, aged thirty-two years, ten years married, and sterile. After having suffered for some years with chronic metritis, treated by local cauterization, which had left considerable hardening of the neck of the womb, she was gradually seized with neuralgic attacks in both legs, each localized in small circular spots. The slightest touch of her clothes caused insupportable pain, preventing her from walking, and at the height of the paroxysm she was, as it were, quasi paralyzed. These paroxysms lasted sometimes forty-eight hours. The patient complained, too, of an uneasy feeling in the back, which obliged her to bend somewhat forward. On examining the back, I found that during the most violent neuralgic paroxysms there existed, between the third and fourth dorsal vertebræ, a painful point situated, sometimes, on the vertebral column, but oftener in the course of the intercostal nerve. By placing the positive pole upon a point on the vertebral column corresponding to the origin of the intercostal nerve, I had the satisfaction to invariably observe the sudden cessation of the neuralgic paroxysm. The treatment of the disease lasted from three to four months, during which time I repeated the experiment from twenty-five to thirty times. You observe the same effect in men who, from paralysis (tabes cervicalis), suffer from eccentric neuralgia in the extremities, and which is often confounded with rheumatismal pains. I should state here, for the benefit of those who may wish to repeat my experiments, that the curative result greatly depends upon the amount of surface of the pile, and that piles composed of small elements should not be employed.

I should add that the effect of the constant current is only radically curative when it reaches the disease at its source; for example, if it reaches and removes the swelling of the nervous sheath, either in articular rheumatism or in a traumatic lesion followed by neuralgia. If it does not reach the source, if it does not remove the effective cause of the disease, the result produced will be only temporary. Thus, where a tumor compresses a nerve and neuralgia results, it is evident that the current cannot cure the neuralgia if it be powerless to reduce the tumor.

The exciting, or rather reanimating effect of the constant current manifests itself under a variety of circumstances. First of all, it must be noted that this recrudescence of the forces of the whole body, by means of the current, not only takes place in central paralysis, but, also, in peripheral (reflex) paralysis, and in proportion as the application is made near to the cerebral and cervical regions. This effect shows itself particularly when the debility of the nervous centres is caused by the constriction of the great cerebral vessels not permitting the free passage of the blood. In such cases you will see the pallor of the face, which might lead one to infer the presence of anæmia, quickly disappear. On the other hand, the action of the current upon the functions of the respiratory and cardiac nerves may improve the state of the blood, so that, after a protracted application, you will see feeble and pale persons recover their color, with increased rapidity of pulse. As to chlorosis and anæmia, which have their origin in organic diseases of the liver and intestines, you will find them always rebellious to the action of the current.

[To be continued.]

On Cholera: An Account of its History, Etiology, Pathology, Prophylaxis and Treatment. Prepared by C. C. Terry, M.D., New York.

(Continued from page 121.)

History.

During the epidemic which continued from 1817 to 1838, cholera visited a large part of the inhabited world, involving nearly all of Asia, touching upon Australia, skirting the African shore of the Mediterranean Sea, sweeping in wide columns throughout Europe, and traversing the most populated parts of the Western Continent—its northern limits being Archangel and Kiachta, its southern, the Swan River in Australia, while in America it reached from Quebec to Valparaiso.

In tropical countries, the commencement of the rainy season was the time of its reappearance or exacerbescence. Outside of its mother-country temperature and seasons appeared to hold some control over its spread; but the exceptions hardly permit such a rule. Nevertheless, its march towards the north was much slower than its southern progress: thus in one year it spread in a southern direction about thirteen degrees, while six years were required for a corresponding northern extension. In Persia the disease regularly disappeared with the commencement of cold weather.

Both times it extended into Europe while the season was still warm, and its spread towards the high north was in summer—all accounts agreeing that the epidemic usually disappeared or considerably abated at the approach of the cold season, and in no case did an epidemic arise during the winter, although an already existing epidemic in several cases (Moscow and Orenburg, -18° and -30°, R.) continued with violence in spite of the cold.

During 1838 isolated instances of the disease were reported in Europe, but the following seven years were a period of repose.

Cholera existed in Egypt in the summer of 1837 and spread to Tripoli and Tunis, as before mentioned.

In India repeated outbreaks occurred during this period, in which China, the Philippines, and Persia (Drasche) were attacked (1841 and 1842).

1844 may be considered as the commencement of the second pandemic period. In this year it reached Afghanistan, by passing from the northwestern provinces of India by the way of Lahore to Kashmir (Haeser), reaching Cabul in June, Herat in July, Buchara in September, and Persia at the end of the year. In May, 1846, cholera appeared almost simultaneously at Teheran and Asterabad. In Teheran, during a period of four months, 9,000 died out of a population of 130,000. In October the disease broke out in Saljan on the Caspian; Aden and other points on the Black Sea were attacked in November.

From the Persian Sea to Bagdad, thence along the Euphrates and Tigris, the disease extended to Mesopotamia; in October Bassora was attacked, and soon the whole extent of the Arabian coast. In November the pilgrims at Mecca and Medina suffered severely.

At the end of the year the disease had extended northerly into the Trans-Caucasian countries. During the following winter the epidemic was hardly apparent, but with the warm weather of the succeeding year came a general expansion of the epidemic and a great mortality of the attacked. According to official accounts, 17,055 persons were attacked during the interval from October 16, 1846, to June 14, 1847; and of this number 6,218 died (36.4 per cent.) The mortality was supposed to be reduced by the use of naphtha brought from Baku.

The Caucasian mountains divided the epidemic coming from the Caspian Sea into three distinct lines: one radiated to the north (Astrachan), another passed westerly along the northern slope of the mountains into Southern Russia, while the third line took a southerly direction to Georgia and Armenia. Among the mountains cholera appeared at a height of 7,000 feet. (Pirogoff.)

The war at that time in these regions may have assisted in disseminating the disease so widely.

In the early part of 1847 cholera extended over the Caspian coast and neighboring districts.

Isolated cases occurred at Chosme in January and February, but the epidemic did not become considerable before April. Derbent was attacked April 7, and the disease remained here a long time, causing a total mortality of 43 per cent. (Drasche.) Kisliar was attacked on the 24th of May. Meanwhile the disease spread over the adjoining districts and appeared in Tiflis at the end of May. In its northern route Astrachan was reached July 3, 1847. Thus in *three* years it reached where before were required *six*.

Meanwhile a destructive focus was forming in the south at Constantinople. Here the first case occurred September 1st (1847), on a ship just arrived from Trebizond, while diarrhœa and cholerine prevailed in the city (Hasser); the disease assumed the form of an epidemic about October 24th (Drasche), and remained at Constantinople until the middle of January, 1849, thence overspreading Western Europe.

The western route along the north side of the Caucasus passed along the Terek and Cuma, spread westerly by the way of the Black and Azof seas to enter Russia from the south.

Stawropol was attacked in June, Jekaterinoslaw the last of July. The disease moved slowly along the eastern coast of the Black Sea, reaching Redut-kale August 5th, and then by a retrograde movement appearing at Anapa on the 21st of September.

From Stawropol, in a northwesterly direction, it soon appeared among the Cossacks of the Don (commencement of July). On the 12th of July it broke out in Jekaterinoslaw, in Taurida with the commencement of August, thence to the neighborhood of Charkow at the end of July, attacking the city on the 9th of August. About the 12th of August it appeared in Kursk and Woronosch, Tambow September 5th, and Tula September 17th. While extending towards Moscow from this direction, another line was approaching from the direction of Astrachan. The disease appeared along the right bank of the Volga at the end of July, at Tschernoi-Jar July 25th, at Laratow August 11th. It was soon diffused throughout the neighboring districts, but again sparing the German colony of Sarepta.

Pensa and Simbirsk were soon attacked, then Kasan. From Kasan one line extended westerly towards Nischni-Novogorod and Moscow, while another line extended southerly towards Orenburg (middle of September) and Uralsk (end of October). Cholera had already existed at Tobolsk in the summer.

Thus the disease reached Moscow from two directions, requiring this time but *four* years, whereas formerly *thirteen* were necessary for the disease to march from its native place to this city. In about four months the vast empire of Russia was filled with cholera, the disease appearing in some places only in a few isolated cases, and in other places as local epidemics.

The disease broke out in Moscow September 30 (1847), the first cases being a servant and her child in a refugee family from Saratow.

Petersburg was attacked October 17 (1847). From October 17 to July 15 of the next year, in Petersburg and its environs, 29,126 persons were attacked, with 15,814 deaths (54.3

per cent.) (Haeser, Lehrbuch der Geschichte der Medicin und der Epidemischen Krankheiten, p. 751.)

In the spring of 1848 cholera reappeared throughout Russia, after subsiding and in some places disappearing during the winter. At Orenburg 8 per cent. of the attacks were fatal; at Nischni-Novogorod 9 per cent. succumbed. On the 4th of May Moscow was again attacked. This time there were 16,248 cases with 8,025 deaths. Petersburg was attacked at the commencement of June, and here 22,022 cases occurred with 12,228 deaths (55½ per ct.)

At the same time the epidemic extended easterly to the Ural, northerly to Archangel, westerly to Finland and the Baltic provinces. On the 9th of July cholera appeared at Riga, and soon after at Mitan and Reval. In Riga, with a population of 50,000, from July 9th to October 1st, 7,000 persons were attacked, with 2,000 deaths. 2,000 were attacked at Mitan and 980 died out of a population of 16,000.

Cholera appeared at Dorpath August 6th, at Warsaw about the middle of the month, and by September the whole of Russia and Poland was infected. With October the severity of the epidemic diminished, and before December it almost disappeared throughout the Russian dominions. Russia remained free from cholera during the two following years, excepting isolated cases in 1849 in Petersburg and Finland. (Haeser, 752.)

In the spring of this year (1848) the disease made an extensive radiation from Constantinople. On the Black Sea Trebizond and Samsun were the only places attacked, but Asia Minor suffered severely, especially Smyrna; thence in a southerly direction the disease spread to Syria and Jerusalem. Pilgrims carried the disease to Egypt. In Lower Egypt alone 55,000 died, out of a population of two and a half millions. Algiers and Tunis suffered at the same time, and here the disease lingered during the next year.

From Constantinople in a westerly direction the epidemic spread to Salonica, and thence by ship to the island of Skiathos. Greece was again spared.

To the northwest Adrianople, Rumelia, Bulgaria, and the principalities of the Donau were attacked.

The earliest cases in Galatz occurred in April, a few days after the opening of commercial intercourse with Constantinople, and seven weeks later Braila was attacked. From these places the disease spread along the Donau and throughout Wallachia. In May Jassy was attacked and soon the whole Moldau was overspread. It was remarked that at this time the temperature was extraordinarily high. The Russian and Turkish troops suffered considerably. Bukowina, Gallicia and Hungary were successively involved, especially those places where troops were stationed.

A short time after the disease appeared in the Russian Baltic districts, Poland, west Prussia, Posen, and Schlesien with a few places in Pomerania, Holstein, and Saxony, were attacked. Danzig was attacked Oct. 10th; the disease remained in Breslaw during the winter, disappearing the following March.

In Berlin doubtful cases occurred as early as the end of June, but the disease became general after the 30th of July. During the continuance of the disease at Berlin 2,457 were attacked and 1,595 died.

At the end of August Magdeburg received the infection from Stettin. Halle suffered severely, but the epidemic was quite mild at Leipzig and Böhmen. The disease spread to the lower Elbe districts in September, especially at Hamburg and Bremen. In October (1848) cholera appeared at several places on the west coast of Norway between Bergen and Stavanger; it remained on the coast during the greater part of the unusually mild winter, without extending to the interior.

In Holland the disease appeared this fall at Utrecht and Rotterdam.

In Belgium the first case occurred October 28th, on board of a steamer which had arrived in the bay of Antwerp from Rotterdam. At the same time a number of isolated cases occurred in the city, but the disease did not assume an epidemic character until some time afterwards, Hainaut, Lüttich and East Flanders being in the meantime attacked.

France remained free this year.

But the disease appeared in England, in October at London and Birmingham, later at Edinburgh, Glasgow, and on a convict ship lying at Woolwich. It appeared in Ireland about the same time, isolated cases occurring during the winter, but there was no decided epidemic until the following spring.

Austrian troops brought the disease into upper Italy, and it extended into the southern part of Switzerland.

Cholera appeared this year also in the United States, but this time it extended from the south. Before the middle of December immigrant ships brought the disease to New Orleans. The weather at that time was very mild, the temperature rising every day as high as 23°, R. About the 1st of January the weather became cooler and the disease diminished. Among the plantations near Natchez it lingered till spring, but did not become general in the city. On the 20th and 21st of December two deaths occurred at Memphis, after the arrival of a steamboat from New Orleans. For twenty-five days the disease remained confined to the landing place and to the persons communicating with the vessel, then it began to spread to the more distant houses.

Texas became infected before the end of this year, but there was no general outbreak until the next, 1849.

In the spring of 1849, after being confined to New York and the lower part of the Mississippi Valley during the winter, it extended more generally. Passing up the Mississippi it appeared at St. Louis and Cincinnati, but diminished in severity as it approached the eastern coast, New York and Baltimore being the chief points on the Atlantic. Its western route was more destructive, the whole Mississippi Valley being involved.

San Antonio was the focus for its extension towards Mexico. Thence it passed along the Rio del Norte to Brazos Santiago, and shortly after at Matamoras, where 600 died out of a population of less than 5,000.

At the end of March it reached Monterey; it was at Saltillo in April, and from this place it rapidly spread south to Zacatecas, southwesterly to Durango, and northwesterly to Chihuahua. Cholera reached the west coast of Mexico from Panama in the course of the summer, attacking Acapulco and Mazatlan. Panama and New Grenada suffered this year. The disease appeared first at Chagres, then spread on the one hand to Carthagena, Santa Maria, and up the Rio Magdalena to Santa Fé de Bogota, and on the other hand along the land routes over all Panama. Guatemala and Costa Rica remained free.

In the year 1850 cholera still existed in Europe. There was a short pause during the severe cold of the winter, but with the warm weather it took a wider spread; but the mortality was comparatively slight. Halberstadt, in North Germany, became, in February, the focus for a considerable radiation. The disease passed in an easterly direction to Magdeburg, Potsdam and Berlin. In Berlin the epidemic commenced August 7th, and continued fourteen weeks; there were 1,185 cases with 711 deaths. Thence it spread to Perleburg, Wittstock, Stettin, Greifswalde, Barth, and Stralsund—in Mechlenburg, Rostock and Güstrow. In its further extension north the disease passed into Schleswig-Holstein, where Oldesloh, Ploen, Preetz, and Kiel suffered the most.

In Denmark the disease appeared first on the islands of Laaland and Falster. From Halbustadt it passed to Wolffenbüttel, Scheppenstadt, and Braunschweig. In the city of Braunschweig 1,017 died, out of a population of 38,000.

Hanover suffered much less. The disease appeared at Gieboldehaus in July. It was said to have been brought there from Magdeburg by a female servant. In the neighborhood of the Hartz Mountains not many cases occurred.

In Hessen the neighborhood of Cassel suffered severely. In the north of Kurhessen several cases occurred from the middle of August to the 1st of September. These cases were imported from Braunschweig. The first native who suffered was a tavern-keeper, in whose house a person affected with cholera-diarrhœa had stopped.

About the same time the disease appeared in Merseburg, whence it spread in one direction to Erfurt, Dessau, Mühlhausen and Heiligenstadt; in the other direction it passed to Leitz, Scheiditz, Torgan and Leipzig.

In the other Prussian provinces the disease did not become general, although cases occurred here and there.

In Westphalia and the Rhine provinces cases occurred during the summer; on the Rhine the only place severely attacked was Coblentz.

In the fall the disease appeared at many places in Germany, being especially severe in a few overcrowded military hospitals at Torgan and Volkershausen. In Posen there was a local epidemic of considerable severity, which extended to many principalities of the Austrian monarchy.

In Böhmen, where the disease existed during the winter of 1849–50, new outbreaks occurred in the level districts quite early. In January cases were observed in Budweiser, Pardubitzer and Prague, but only here and there a case, and the disease did not fairly become epidemical before the commencement of May. From August 4th to September 8th the flat country suffered most. In November its severity diminished, and in December the disease entirely disappeared.

The disease lingered in Prague during the winter, but in the middle of February it suddenly increased in extent and severity, concentrating especially in that portion of the city lying on the Moldau. In March it decreased somewhat, but at the end of May exacerbated again, so that from the 26th of May to the 2d of June 215 persons were attacked. By the middle of June it again sensibly diminished, having attacked 1,559 with 838 deaths. During July isolated cases occurred, some of a severe type, and the disease seemed about to disappear, when it again broke out (November 4th) and continued into the succeeding year.

In Vienna the disease began to increase about the 10th of June. It was especially severe at Leopoldstadt. Up to the 9th of November 1,980 were attacked, with 900 deaths, so that 2 from every 1,000 of the inhabitants died.

By the commencement of July cases appeared in the districts neighboring to Vienna, in Neu-Lerchenfeld and Ottakring. Other places became subsequently attacked, and the epidemic became general throughout that section. In ninety-nine districts, having a population of 148,812, there were 3,487 cases, with 1,097 deaths. The country suffered more, proportionately, than the towns.

Semmering, on the southern confines of lower Austria, lying 3,123 feet above the sea, was attacked during the construction of the great railroad. At the commencement of August it broke out on the Austrian side of Semmering, and seven days later on the Stiermark side, among the workmen living in the barracks. It continued with considerable severity until the last of the month, and disappeared in September. In spite of the continual communication with the neighboring districts, and the flight of many of the inhabitants, the disease remained confined to the barracks and a narrow immediate vicinity.

On the Stiermark side of the hill 118 workmen were attacked, with 89 deaths, and at the same time 30 to 40 cases of diarrhœa occurred daily.

Of the whole number of workmen (about 8,000) 582 were attacked, with 257 deaths.

During the summer various places in Hungary were attacked, but there was no epidemic.

Ofen was infected at the end of July, Pesth at the commencement of August. The disease continued in these districts until the end of September, causing about 182 deaths. It appeared at Trieste in October, but in the remaining portions of Austria it did not extend much and was not of a severe type.

The mountainous parts of southern Europe were generally spared. But repeated outbreaks of a mild and local character in Marseilles caused some apprehension of a general epidemic, which, happily, did not recur. The southern islands, however, were not so fortunate.

The disease appeared in Malta at the end of May, and until the 19th of August 2,158 people were attacked. Among the Ionian Islands, Corfu and Cephalmia suffered severely. Calamis suffered the most of all the Grecian isles.

During the dry and hot summer of this year (1850) that part of Sweden lying between 55° N. and 60° N. was visited by cholera. Ships with cholera on board had arrived at most of the ports along the coast of this section, and in August the disease appeared at Malmö, on the southern point of Sweden. Grähs, of Malmö, denies its importation, however, and says that only *three* cases occurred outside of the city, although communication was considerable and never restricted. Soon the disease appeared at various other points, at first quite distant from each other, progressing toward the north with a westerly inclination. After an outbreak at Götheborg the disease progressed more rapidly. The first cases at Götheborg occurred on the canal and among the shipping. While thus extending northward in Sweden it passed westerly to Norway, but not with so destructive a march. Excepting the northeast of Gothland and the quarantines, only two places on the eastern coast were attacked, viz., Ronneby and Döderhultsvik.

The epidemic remained confined to 80 communities, attacking 4,410 of the inhabitants. Most of the cases occurred at Malmö and Götheborg.

The whole epidemic, five months in duration, caused an aggregate mortality of $39\frac{1}{4}$ per cent., and nowhere was it so severe as it had been in 1834.

In several communities having little and in some cases no communication with other neighboring communities the disease was most severe. At many places, especially the small islands, direct importation could be proved as occasioning the earliest cases. Berg relates that some zymotic diseases (dysentery and small-pox) were very prevalent just before the time of the appearance of cholera, and he also states the cholera seemed to have no effect upon the symptoms and course of these diseases.

As before stated, the disease passed from Sweden to Norway. Christiania and several coast cities were infected, but there was no general epidemic. Vomiting and purging occurred in Christiania four months before the breaking out of the epidemic (Oct. 4th). The first cases of cholera occurred on the east side of the city. Akstykker denies that the disease was brought into Christiania.

On the Western Continent cholera still existed, and this year was more severe than last. Many places were affected at once, and the disease appeared here and there over a vast extent.

In New York and other places along the Atlantic and Gulf it did not appear with such severity as in California and some of the W. I. islands. In California the first outbreak was at Sacramento, before the beginning of October.

On the 10th of October the first case at San Francisco occurred—a passenger just arrived from Sacramento. It was thought that the first infection was received from overland emigrants. The U. S. Mail steamer "Northerner" carried the disease from Panama to San Francisco. After the city was thus infected by communication with Sacramento and Panama, the disease rapidly increased, the Chinese suffering the most severely. These people lived under circumstances favorable for any disease propagable by communication. The epidemic seemed to reach its maximum about the end of October, and by the middle of November it had mostly disappeared. Out of less than 25,000 inhabitants nearly 600 died.

Mexico was visited again this year. By July many places were attacked, but not severely, with the exception of Vera Cruz and Tampico, which suffered considerably. By the middle of October the disease had entirely disappeared from the Mexican States.

On the continent, the Isthmus of Panama was the last lingering place; but Cuba, Jamaica, St. Domingo, and the neighboring W. I. Islands suffered severely.

In April the disease commenced at Havana, and was for a time confined to the city and the neighboring coast; but in the summer it spread into the interior, where its course was very destructive, depopulating many plantations. At the commencement of the next year it had not entirely disappeared in Cuba. In Jamaica the disease did not make much progress until fall. The first case was a woman at Port Royal, who had washed the clothes of a person who died of cholera on board a ship. Such was the severity of the disease here that in a population of 40,000 there were, during the height of the epidemic, as many as 200 to 280 fatal cases every day.

In this year (1850) also cholera appeared on the north coast of Africa with a severity fully equal to that of former epidemics. Egypt was attacked now for the third time, Cairo and Alexandria suffering especially. At Cairo the epidemic continued sixty-seven days; at Suez 100 cases sometimes happened daily, in a population of 2,500.

Along the coast the disease broke out in Tripoli and Algiers.

In its mother-country the disease was still active. After appearing to an unusual degree on the delta of the Ganges, it extended to various places along the coast, invaded Bombay, and in August overrun the whole Punjab.

There was also cholera at Mecca and Medina.

At the commencement of 1851 cholera still existed in Austria. At Böhmen there were a number of cases. In March and April new outbreaks occurred here and there, especially at Bankowan and Randnitz. In May Prague was again attacked. After two months there was a diminution, but in August and September the epidemic augmented considerably. During two years and seven months the disease existed in Prague, while measles, scarlatina and typhus were at the same time very prevalent. (Drasche.) On the flat country the epidemic commenced in June, and in several places there was a coexistent epidemic of small-pox.

In Schlesien the disease appeared at the commencement of August, but did not extend far.

With the exception of Morocco, no part of Africa suffered to any considerable degree this year.

In America the disease was hardly noticed this year, except at Jamaica, New York, and several Western cities, where there were a number of cases.

But in India the epidemic commenced the previous year was continued in this. In February and March the epidemic was considerable in Bombay; the rate of mortality was higher than had been observed during many previous years. In Oude, at Lucknow, the disease was very prevalent in August and of a fatal type. The disease again crossed the equator, and appeared at Sumatra, Java, and other of the Indian islands.

In its western migrations it made considerable progress toward the north, passing through Persia along its former route to Bassora and Bagdad. Bassora was attacked in July and Bagdad in August.

In 1852 another European epidemic appeared, causing, during four years, a greater devastation than any former visitation of cholera. In some places in Russia the disease had lingered since 1848, and here was the commencement of a fresh outbreak, destined to be so disastrous. Petersburg was attacked in the beginning of October, but the epidemic did not reach its maximum until the following year. In the summer the disease appeared in Russian Poland with such severity that in Warschau alone 11,021 inhabitants were attacked by the middle of October. From Russian Poland the Prussian boundaries were crossed in four ways: from Kalisch to Posen, along the Weichsel to West and East Prussia, from Landsberg to Upper Schlesien, thence along the Warthe, Netze and Oder, towards Pomerania and Brandenburg. From Thorn the disease passed along the Weichsel, and overran the greater part of West Pomerania. From Ortelsburg (East Prussia) it spread to Königsberg, the district of Gumbinnen, and finally in Upper Schlesien to Breslau. The first cases in Posen happened at the commencement of July, and were refugees from Kalisch, and on the 20th of July the city was attacked.

In Bromberg the disease appeared at the commencement of October, and in Marienwerder the northwestern districts were comparatively free.

Polish raftsmen brought cholera patients down the Weichsel to Thorn and Grandenz.

It was observed that the disease appeared first on the rivers and along the waterways, thence spreading rapidly to the interior, where its ravages were more considerable than at the water or the places first attacked.

In the district of Danzig the disease had a universal extension and the city suffered considerably.

In July and August there were four cases of cholera at Berlin, but the epidemic was not fully declared until September, the real commencement of the epidemic being the case of a woman who had removed thither from Posen. By the middle of October the disease reached its height, but lingered till the close of the year. During sixteen weeks there were 247 attacks, with a mortality of 66 per cent.

Measles and scarlet fever were quite prevalent at the same time with the cholera.

In the district of Potsdam, the most western point reached by the disease in Germany, Prenzlau was the only place attacked; the first case happened October 3d, in a hospital, and the first patient was from Berlin. In Pomerania isolated cases occurred.

The total number of attacks in the Prussian States from July 3, 1852, to April 28, 1853, was 68,431, with 40,340 deaths. The longest duration of the epidemic in any district was 283 days, the shortest 118 days, and importation was reported in almost every instance. In spite of free communication between the several districts a long time often elapsed before infection took place, although cholera patients were continually passing from one place to the other. (Brauser.)

While the disease was thus involving the Prussian States it passed from Russian Poland to Gallicia, but did not become decidedly epidemic this year. The first cases occurred in Chwalowice about the middle of September; Grebow was attacked soon after, and isolated cases were noticed in Cracow and Dwary. Toward the end of October the more interior places were visited, but in places the number of attacks was quite small.

Diarrhœa existed epidemically at the same time.

In the same year (1852) cholera existed on the American continent and the West India Islands, but to a limited degree. During the summer there were cases at Hamilton (Canada), and at the same time a more considerable appearance at Panama. There was no sign of an epidemic at San Francisco, although many patients went there from Panama.

In Sacramento there were a number of cases. In Havana, during August and September, a number of cases of cholera and yellow fever were observed both in the harbor and in the city.

This year, too, the disease still existed at several points in the western part of Asia, at Tabris, and at Kurdistan, where the epidemic was severe.

In 1853 cholera reappeared at many places where it had formerly been and attacked other places hitherto free from the disease. In Russia it did not extend much this year, although Petersburg (still retaining the epidemic of last year) formed in the spring a focus for a considerable radiation. In May the disease appeared in the south at Staraja, Russia, brought by travelers from Petersburg, and by the 20th of June the whole city was overspread. Moscow was this time infected directly from Petersburg. From the capital the disease passed to Cronstadt, towards Archangel, being particularly severe in Finland, at Helsingfors and Abo. In Russian Poland the disease again appeared epidemically. It broke out at Warsaw the middle of August, and thence spread on the one hand to Wolhymnia and Podolia; on the other hand to Gallicia.

At this time cholera existed in the south of Russia to a considerable extent; it reached Moldau and Wallachia, where Jassy was attacked the commencement of December.

In Prussia the epidemic had nearly disappeared in April, but in the summer it broke out again.

This year the disease seemed to increase from the seaside toward the interior, contrary to the progress in the previous year, and it was confined principally to the Baltic provinces.

Posen was not severely attacked, nor was Brandenburg, where it appeared in only a few places.

The Rhine provinces remained free, notwithstanding the unrestricted communication with Holland, which was at that time infected by the disease.

In Westphalia a few cases were observed, and Schlesien was also free from the epidemic.

On the 13th of July cholera appeared simultaneously in Memel, Danzig, Stettin, and Thorn—places situated far apart.

August 7th the first case in Berlin was reported. The disease continued sixteen weeks, attacking 1,405 inhabitants, with 940 deaths.

Hanover, Herford, Hamburg and Bremen, were also infected; but at Bremen the disease appeared mostly among the emigrants.

In Holland, Belgium, and France, the epidemic of this year was very severe.

Rotterdam was attacked August 22d, and Amsterdam September 27th. Dortrecht, Schiedam, Delft and Gouda suffered the most of the Dutch cities. Brussels was attacked at the end of October, although cholera had already existed sometime at Antwerp.

France was again invaded from the northeast coast, but this time commencing at Havre.

Paris was attacked November 7th. Up to January 7th, 1854, there were 962 cases. The disease lingered through the winter, but in 1854 a general outbreak occurred.

The eastern ports of England having communication with the infected cities of the continent were also attacked in 1853. Newcastle and Gateshead were the first places attacked epidemically, while in London only isolated cases were observed; but in October the epidemic reached its maximum in London, and disappeared by the end of December. From July 7th to the end of December there were 1,265 deaths in London. Before the end of the year other cities were attacked; Edinburgh in September, Liverpool at the commencement of October, and Manchester, all suffering severely.

The disease remained through the winter in many parts of England, and reappeared with augmented severity the following year.

This year also the disease remained in the three Scandinavian kingdoms.

While the disease had repeatedly appeared in Sweden and Norway, Denmark was, until now, quite free.

Copenhagen, having almost universal communication, was attacked in June, and formed a focus from which the whole country was infected. Up to the 1st of October 7,219 (5 per cent. of the population) were attacked, the greater part occurring during the first six weeks, the deaths for these six weeks being 1,304. The parts of the city which suffered most were affected the shortest time, and in isolated quarters of the city the duration of the epidemic was from ten to sixty-four days.

At the time when the epidemic raged most severely it passed through some places like a whirlwind, prostrating in the course of three or four days most of the inhabitants.

After the outbreak in Copenhagen, other parts of the kingdom were soon attacked, so that while Copenhagen served as a focus, the most of the kingdom became infected in the course of six months.

The places lying nearest the capital were the first attacked, and the first cases were generally persons who had spent some time in the capital.

In Nykjöbing the first cases were seamen who had just come from Copenhagen.

Cholera appeared on the island of Fünen at the middle of July; at first in Svendborg, where, in three weeks, two per cent. of the inhabitants died.

On Jutland, Aarhuus and Aalborg suffered the most. To Aarhuus the disease could be traced from Copenhagen, and it attacked four per cent. of the inhabitants in a period of fourteen weeks. But the greatest severity of the epidemic was felt in Aalborg, where nine per cent. of the inhabitants were attacked.

On the island of Morsô the city of Karby was attacked; on the 27th of July a female from Copenhagen was the first case, and soon after the rest of the family were also attacked. The infected house was immediately isolated, and the disease made no further extension. While in the south of Jutland only one case occurred (at Fridericia), in the north the disease was more extended at the extreme north point. (Skagen.)

In Denmark, during the half year the epidemic continued, 10,598 of the inhabitants were attacked, with 6,688 deaths. The mortality for the whole kingdom was 63 per cent.; in the cities 64 per cent., and 57 in the country. Just before the commencement of the cholera epidemic diarrhœa was less than usually prevalent, but as the cholera epidemic magnified diarrhœas became more frequent. (Bricka, Hübertz, Mansa.)

In the neighboring Sweden the disease became in this year quite extensive, appearing at Ystadt at the commencement of July (and it is still a question whether the disease was imported from Copenhagen or originated here without communication), thence to Malmö, Helsingborg, Götheborg, Carlskronar, Stockholm, and reached Umea, its most northern point.

In Carlskronar the disease appeared at the commencement of August, and 1,055 of the inhabitants died. Along the eastern coast cholera appeared at Norrköpping at the end of August; Stockholm was attacked the middle of August, and the disease remained here during the rest of the year, 2,875 of the inhabitants dying (1 in every 32 of the inhabitants). Of the thirty-one cities attacked thirty had water communication, the other one being an interior town. Of three hundred physicians five died, and of three thousand nurses one hundred and twenty-seven. Compared with the inhabitants in general the nurses did not present an unequal mortality. To the greater number of places the disease was brought by seamen, in some cases by travelers, and in a few cases by clothing or other effects, after the arrival of which cholera appeared in from two to four days. Of fifty-four cities which had isolated themselves thirteen were affected, and several suffered more than those having free communication.

[To be continued.]

PROCEEDINGS OF SOCIETIES.

NEW YORK PATHOLOGICAL SOCIETY.

Stated Meeting, December 27, 1865.

Dr. L. A. Sayre, Vice-President, in the Chair.

FOREIGN BODIES FROM THE THROAT—DR. H. B. SANDS.

Dr. Sands presented three foreign bodies which had been removed from the throats of different individuals. The first was a fish-hook, which he had removed several years ago from the throat of a boy aged 8 years. On examining the patient, who was brought by his father, the snell of the hook could be seen protruding into the cavity of the mouth sufficiently far to enable the end to be grasped by the incisor teeth. The hook itself could not be seen. By traction on the snell, the hook could be brought up sufficiently far to enable its point being touched by the end of the finger introduced into the pharynx. It was then found that the point had passed through a portion of the right lateral wall of the pharynx, and engaging a considerable amount of tissue in its grasp, it was not thought expedient to tear it through. After some considerable trouble and many efforts, the shaft was grasped by a curved forceps, after which, being pushed backward and in the opposite direction from which it entered, it was disengaged and removed in the same manner as a hook from the mouth of a fish.

The second of these foreign bodies was a small chicken bone removed from the throat of a son of Dr. Roberts. On a Sunday, Dr. Sands was asked to see this gentleman, at his residence, in Hoboken, the statement being that a chicken bone had been swallowed by the patient during the Wednesday previous, since which time he had been subjected to much inconvenience and suffering in consequence of the impaction of this foreign body in the œsophagus. The doctor went over and examined the patient, and, being satisfied from the symptoms which presented themselves, the great difficulty attending deglutition, etc., that the patient's supposition was correct, had him removed to New York. It was thought best to introduce the œsophageal hook, the whalebone instrument, to the extremity of which is attached a double fenestrated triangular floating hook arrangement, but the extremity broke off in the preparations for the operation. A simple ivory and whalebone probang was next introduced, and the foreign body was reached without much difficulty. An attempt was made to push it towards the stomach. The body was evidently dislodged, but, of course, was not expelled. The patient left for his home in company with his father, and on his way thither was seized with an attack of vomiting, which ended in the ejection of some mucus, together with the bone in question.

The third specimen was also a chicken bone, evidently a portion of the breast bone, measuring about an inch and a half in length and nearly an inch and a quarter across its broadest portion. It was irregularly triangular in shape. This was accidentally swallowed by a gentleman in taking his Christmas dinner. The doctor introduced his finger into the throat, and at first thought that he felt the bone; but on examining the case with greater care, afterwards discovered that he had mistaken for it the extremity of the epiglottis, which was enlarged and quite prominent. A bougie was next passed into the œsophagus, when it became very evident that a foreign body existed there. The whalebone instrument with floating hook was next introduced, was passed beyond the obstruction, and in attempting to withdraw it the foreign substance was caught. Traction was resorted to, but the instrument slipped; another and another effort was made with a like result, when finally, securing a firm hold, the bone was disengaged by force and brought up into the cavity of the pharynx, from which position it was easily removed by the patient's fingers.

Dr. Hamilton wished to call the attention of the Society to the danger attending the use of the instrument which Dr. Sands had employed in the case last reported, and premised by saying that Dr. Sands' average experience had been much better than his own in the removal of foreign bodies from the œsophagus. Dr. Hamilton had used the instrument in question upon two cases, and in each instance had met with ill success. In the first case, a stout Dutchman came to him with the story that he had swallowed a fish bone. The œsophageal hook was passed down a certain distance, and then, on withdrawing it, it caught in an obstruction, supposed to be the foreign body. An attempt was made to dislodge it and failed in accomplishing the object; another and another attempt was likewise made in succession and likewise failed, each effort being attended with symptoms of impending suffocation and violent coughing. Finally, the patient was forced to leave unrelieved. Within forty-eight hours the patient was dead from laryngitis, induced, no doubt, indirectly, by the use of the instrument. The foreign body was not discharged. No autopsy was allowed.

His second case occurred a year after. The patient was a young lady, who was also supposed to have swallowed a fish bone. The instrument was introduced and passed into the œsophagus easily enough, but was arrested on the attempt at withdrawal. All efforts to overcome this obstruction, thought to be due to the presence of the fish bone, proved unavailing, and each attempt was followed by the same suffocative symptoms noticed in the first case. Finally, during one of these efforts, the point of the instrument became so fixed that, in order to dislodge it, a stomach tube was passed over it and beyond its point. In that instance the fish bone was not removed, at least, at the time of the operation. He was unable to give any further particulars of the case from memory, merely stating that the patient survived the operation and afterward did well.

Immediately after this latter case had transpired he instituted some experiments upon the dead subject with the instrument, and found that in every instance some portion of the hook caught in the arytenoid cartilages, when an attempt at withdrawal was made, and that sometimes it would be almost impossible to disengage it. He did not see why the same thing should not take place in the living subject, and why, under some peculiar circumstances, the end might not be so hooked into the cartilages as to render its disengagement next to impossible. He believed that in both of these cases, reported by him, that it was this complication to the operation which gave rise to the suffocative symptoms.

Dr. Sands confessed to the fact of his attention never having been drawn to these points, and remarked, that before making traction, he was satisfied by the peculiar feel that the instrument was arrested by a hard and firm body.

Dr. Sayre remarked that there was a very useful and effective substitute for the œsophageal hook in an instrument which may be described as follows: In the first place, it consists of a tube like an ordinary catheter, through which passes a flexible rod two or three inches longer. One end of this rod has a suitable handle, the other is attached to the extremity of the tube by means of a collection of stiff hog's bristles, arranged in the direction of the long diameter of the instrument. These bristles are sufficiently stiff and numerous to keep themselves straight and fix the extremity of the rod a certain distance, two or three inches, beyond the extremity of the tube. This instrument is passed into the œsophagus in the same manner as an ordinary œsophageal bougie. If there be any foreign body met with, the handle of the rod is pulled upon, the tube being at the same time steadied, and the result is a bowing out of the bristles by the forced approximation of the respective extremities of the rod and tube. The foreign body is then entangled in these meshes of bristles, and is easily removed by simply withdrawing the instrument. Dr. Sayre stated that with it he had easily removed a large portion of an oyster-shell which had been accidentally swallowed by a young lady while attending an oyster supper. He referred, in this connection, to the case of a child three years of age, who had swallowed two silver shillings. Various attempts were made to make out the situation of the bodies, but without success, except on one occasion, when something foreign to the part was touched with a bougie, but for some reason, then unexplained, this did not occur a second time. The instrument used was the one already referred to by Drs. Sands and Hamilton. Dr. Nott explored the case frequently, but could never succeed in discovering any thing unusual. The child went on comfortably enough until a year and a half after the accident, when she was seized with a severe fit of dyspnœa and a harassing cough, which symptoms gave rise to a very reasonable suspicion of the foreign body being in the trachea instead of the œsophagus. A consultation was called, and Dr. Mott was of the opinion that the foreign substance was in the trachea, and advised an explorative operation. The day following, the little one died. On post mortem it was discovered that the shillings, nicely adapted to each other, had lodged in the lower portion of the œsophagus, and were straddled across the tube in such a manner, with their flat surfaces presenting anteriorly and posteriorly, as to allow the instrument to be passed into and withdrawn from the tube, both before and behind them, without meeting with any obstruction. They, as one body, divided the tube unevenly, two-thirds of the caliber being in front and one-third behind. The two coins were very much corroded, and were so firmly attached to each other by their flat surfaces as to appear like a single piece. Death was the consequence of an ulceration of the parts in contact with the foreign bodies extending into the lungs.

GUNSHOT WOUND OF THE BRAIN—THE BALL TRAVERSING BOTH HEMISPHERES—RECOVERY—DEATH SIX MONTHS AFTER FROM SCARLATINA—DR. HUTCHISON, OF BROOKLYN.

Lydia Sisty, aged 7 years, walked to my office, July 4th, 1864, with her mother, who stated that her child had just been injured by a *buckshot*, fired from a toy cannon by her brother while at play. She fell to the ground immediately on the receipt of the injury, and vomited soon afterwards. I introduced a probe into the external wound, which was situated on a level with the top of the right ear and half an inch posterior to it, expecting, from the appearance of the child, that the shot had not penetrated the skull. The probe, however, entered the brain and passed in about four inches. There was no opening on the opposite side of the skull. I expressed an unfavorable prognosis, and sent the patient home, requesting the mother to call her family physician, Dr. Isaac H. Barber.

I did not see the child again, but Dr. B. has informed me that there was entire absence of any symptoms indicating injury to the brain, except slight vomiting, which continued for two or three days. No treatment was deemed necessary except rest, and she soon appeared as well as ever. She remained in good health until January, 1865, when she was attacked with scarlet fever and died on the 17th of that month. She had no symptoms indicative of disease of the brain during her last sickness.

On the following day, January 18th, a post mortem examination was made by my pupils, J. C. Goodridge, Jr., and J. H. L. Elmendorf, a few hours before the funeral: the family being in an adjoining room, made it necessary to conduct it as secretly and expeditiously as possible. The brain being removed, was brought to my office for examination. The specimen shows, by four slightly depressed cicatrices, that the ball entered the posterior lobe, of the right hemisphere near its juncture with the middle lobe, and made its exit from the brain upon the opposite side, thus traversing the cerebrum from right to left in a direction a little backward and upward. The consistence of the brain at the points of entrance and exit of the ball was normal. The membranes were healthy.

Finding the ball had passed entirely through the brain, had not fallen back into the track of the wound, and failing to discover it with such incisions as would not materially injure the specimen, we concluded it had lodged in the skull near its point of exit from the brain, and, being imbedded in the bone, had escaped notice. The specimen was put in a preparation of alcohol and corrosive sublimate for preservation, where it remained until December 27th, 1865, when Mr. Goodridge, detecting a point of unusual hardness, made an incision and found the ball, much corroded, imbedded in the brain substance an inch and a quarter in front and half an inch below its point of exit from the left hemisphere. The specimen shows the point where the ball was lodged. I suppose the ball, after traversing both hemispheres, struck the skull, and rebounding, lodged in the brain substance at or near the point where it was found.

COMPOUND FRACTURE OF THE SKULL FROM GUNSHOT WOUND—ABSCESS IN THE BRAIN—REMOVAL OF THE BALL AND FRAGMENTS OF THE CRANIAL BONES. AMPUTATION OF THE LEG—RECOVERY. SPECIMENS PRESENTED—DR. HUTCHISON, OF BROOKLYN.

George Ogletree, aged about twenty-seven years, a private in a New Jersey Regiment, was wounded (in one of the "seven days' battles") on the 27th of June, 1862. His injuries were a compound facture of the cranial bones produced by a bullet, and compound fracture of both bones of the leg at the lower third, caused, as he supposed, by the explosion of a shell. He came under my observation one month after the receipt of the injuries (July 28th). He stated that a surgeon on the field had seized the ball with a pair of forceps, and, pulling with all the force he could command, was unable to extract it. The injury of the head gave him no inconvenience whatever, and I did not examine it particularly when I first saw him. On examining the leg I found that the fibula had united, while the tibia projected forward, through the soft parts, about six inches, and was denuded of periosteum.

Amputation of the leg was performed at the point of election, by Surgeon Nelson S. Drake, at my request.

Before the patient recovered from the effect of the anæsthetic, I examined his head, and removed several loosened pieces of necrosed bone, which are here presented, from the upper and posterior angle of the right parietal bone. A piece of ball, which, as you see, is very irregular in shape, was also removed. The ball, I think, was lying on the cerebrum, and its removal was followed by the discharge of about two drachms of healthy pus from an abscess in the substance of the brain. Appropriate dressings were applied, and he recovered without any unpleasant symptoms.

Nine months and a half after the operation, the patient walked into my office, wearing an artificial leg, and was perfectly well. The opening in the cranium was nearly closed by a deposit of new bone, the pericranium having been left at the time of the operation.

DISEASE OF THE HEART, WITH ATELECTASIS OF THE LUNG—DR. LEWIS SMITH.

Dr. Lewis Smith exhibited a specimen of the heart, with vessels attached, which he had removed from a new born infant in the practice of Dr. Little. The confinement was easy and the child was born in the natural position, and on being delivered cried with an unusually loud voice. There was nothing specially noticed in its condition until three or four hours afterwards, when its respiration became embarrassed and the surface presented a cyanotic appearance. It continued so until it died, at the end of twenty hours. On making a post mortem examination, there was found a general and intense congestion of the veins and capillaries of the lungs. The organs were scarcely inflated at all, containing only a little air in their anterior borders; in fact, there was a decided state of atelectasis present. A careful examination of the heart and vessels was made. The heart was in a normal state, with the single exception that the foramen ovale was unusually large, and the valve which usually closes this opening was insufficient to the extent of allowing the passage of a pea.

There was nothing abnormal connected with the great vessels. The brain was so intensely congested, together with slight effusion of blood, that it was at first supposed that meningeal apoplexy existed. The thymus gland was much enlarged. It was difficult to settle the real cause of the cyanosis, whether it was due to the insufficiency of the foramen ovale, to the atelectasis, or to the intense congestion of the brain.

Dr. Jacobi believed that the cause was to be found in the existence of the atelectasis. He did not think that the brain trouble had any thing to do with the case. He recollected one instance of congenital atelectasis which he supposed to be the result of meningeal effusion. In that case there was paralysis of the inspiratory muscles immediately after birth. As regards the blood points, he thought that no importance should be attached, inasmuch as it was very common to find small effused points in almost every organ of the body of an infant that dies soon after birth. The thymus gland being so much enlarged, he thought, might have had something to do in the production of the trouble in the lungs.

Dr. Smith did not wish to be understood as saying that the child had meningeal apoplexy, but that the appearances which at first presented themselves resembled that condition. The child, too, had none of the symptoms which belonged to that accident.

DISEASE OF THE ŒSOPHAGUS—DR. SMITH.

Dr. Smith then presented a second specimen, which was an œsophagus and stomach taken from a foundling that died at the age of two months. Not having its mother's milk it suffered from a derangement of the bowels, and finally was attacked with stomatitis and died from exhaustion. The only disease found was in the lower portion of the œsophagus, which was inflamed and the seat of "thrush." The confervoid growth was found to be made up of penicillium glaucum instead of oidium albicans. The stomach was changed somewhat in appearance, and there were to be seen traces here and there of intestinal inflammation, especially on the colon.

Dr. Jacobi remarked that the situation of the growth was very unusual, and indeed remarkable.

Dr. Sayre stated, in reference to Dr. Jacobi's remarks on the first case of Dr. Smith, that some fifteen or sixteen years ago Dr. Roberts read a paper on atelectasis, detailing several cases of the disease, in all of which the enlargement of the thymus gland was said to have been the cause.

DISLOCATION OF THE WRIST FROM CHRONIC ARTHRITIS—DR. HAMILTON.

Dr. Hamilton presented, lastly, a specimen of pathological dislocation of the wrist joint, the result of changes induced by chronic rheumatic arthritis. No very definite history was obtainable from the patient, except that she had been subject for a long time to attacks of rheumatism, and as the result both wrists were much deformed. The dislocation resembled very much the traumatic variety, in which there had been a knocking off of the anterior lip of the lower end of the radius as well. The anterior lip of the bone had disappeared, but the condition was produced evidently by absorption from the pressure. The lower portions of the radius had anchylosed together, as well as the point of contact of the carpal bones with them. The carpal bones too were fused together, as the result of the same action.

The dislocation, as was usual in those cases, was in the direction in which the greatest force was applied, the direction, so to speak, of those sets of muscles which were the most powerful, and which, in this situation, were the flexors of the forearm. The displacements of the parts being due to the muscular contraction, the question had arisen, in Dr. Hamilton's mind, as to how much good might be done by the employment of a suitable amount of extension to overcome this tendency. He was more particularly impressed with the importance of such a method of procedure, from the beneficial effects of its employment in a case which had recently been communicated to him. The case was one of dislocation of the tibia forward. The dislocation was reduced, and four or five days afterward the joint was attacked with synovitis, giving the patient great pain. The gentleman who attended the case, in making extension found that the pain was, during all the time that this treatment was kept up, entirely relieved. This, he thought, was a very important fact to consider in reference to the condition of the ligamentous tissues in the neighborhood, it being fair to presume that they had suffered greatly at the time of the accident, and that the indications *a priori* would have been to abstain entirely from stretching them.

Dr. SAYRE stated that he had been accustomed to lay it down as a law which admitted of no exception, that extension was to be employed in every case of trouble about the joint, whether the result of injury or not, whenever pain and muscular contraction existed. He was sure that if this principle of practice were carried out that a great many hideous deformities would be prevented as well as a great amount of suffering relieved, and expressed the conviction that the time was not far distant when it would be considered culpable by the profession at large for any one to neglect so simple a means.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Obscure Diseases of the Brain and Mind. By FORBES WINSLOW, M.D., D.C.L., Oxon. Second edition, from the revised third English. Philadelphia: Henry C. Lea. 1866.

Dr. Winslow has rendered eminent services to mental medicine. His editorial labor during fourteen years kept up, vigorously, his well known *Journal of Psychological Medicine.* But, alas! all things have their fate; the journal ceased to appear, and a new era has since opened for physiology and experimental medicine, which is likely to react on the status of our knowledge on nervous affections and, consequently, on psychiatry.

In the first edition of the book before us Dr. W. announced, five years ago, that it was only the precursor of a work relating exclusively to specific and individual types of encephalic diseases. To students of mental pathology it appeared rational that the theory, idea or invention, should come first, and lead the reader to the conception of these types. It was generally thought the second volume would contain the elucidated facts, as proof of the value of the system, while the friends of the author for a long time entertained that hope, until the appearance of a second and third English edition disappointed them. We are consequently left to appreciate the *Obscure Diseases* on its own merit—that of a treatise on general mental pathology.

At the very beginning of his task the author justly admires the grandeur of a detached apothegm of Hippocrates. But why must it be confined to *two words* when the whole sentence is admirable? Certainly, "*occæsio præceps*," the occasion fleeting, is a warning to lose no time in the treatment of insanity; but the whole aphorism is a standard for the treatment of that disease *at all and each* of its periods. First, we find that it is a recommendation to all of us (authors and students) to be active, modest and persevering, in view of the complex conditions of the object of our study—either physiological, pathological or psychical. But the "*subsidia artis*," the recommended means in the second sentence, are the solution of a question which Dr. W. has forgotten in his book, in spite of its actuality and importance, and which is almost proscribed by the *Pharisees* of official science in the medico-psychological associations of London and Paris. Here is the omitted sentence: "Nec solum seipsum opportet præstare opportuna facientem, sed et ægrum et assidentes et exteriora." "It is not enough that the physician should fulfill his duty, but he must be helped by the good will of the patient, by the cares of the assistants, and by favorable external circumstances." Well, such conditions are impossible in our closed asylums, where the patients are displeased at being locked up, where assistants are but keepers, and where walls and iron bars limit all prospects. The new system of *free air* and *protective family* for insane patients, is the only one that answers to the recommendations of Hippocrates.

It is curious to see how tenacious some writers are in pretending that insanity cannot be defined, that it cannot be positively ascertained, and that its seat is unknown. The author says: "Has insanity a centrifugal or a centripetal, a subjective or an objective origin? Is insanity an affection of the mind *per se?* Has the disease a psychical or a somatic origin? Big volumes have been employed to answer such questions. Perhaps a distinction ought to be made between a logical analysis of what soul and body are and a medical investigation of the bodily functions connected with those of the mind. Emotions of the soul are transformed into facts, just as organic lesions may alter the thought; they must be considered as *psycho-vital* manifestations. Let us not forget that organism is but life in action, and human intelligence the manifestation of the soul by the mind. Now, the metaphysical virtualities of soul, life and matter, as *substances*, can never be brought to bear, in experimental medicine, without the greatest confusion and obscurity. Medically, man is a *unit*, and thus only are we able to understand the blending of the *morale* with the organism. We do not wonder that so many chapters of this book are dedicated to solve insoluble questions, or to find the author entangling himself in the explanation of unscientific facts (traditionally repeated in compilations); for instance, the not finding the slightest observable alterations of tissues in confirmed insanity, and, *vice versa*, the existence of considerable pathological alteration of the brain, with a complete soundness of mind during life! In medicine, as in botany, geology or mineralogy, we must be taught how to find. In his first excursion a naturalist finds hardly any thing, because he cannot see the objects of his research. The skill, the art is to know where and how to find, and medical men must, for researches in anatomy, physiology, pathology, and even for psychiatry, consult the celebrated Magendie, Marshall Hall, Müller, Virchow, Flourens, C. Bell, Liston, Claude Bernard, Brown-Séquard, Robin, Kölliker, J. W. Draper, Duchesne, Gluge, etc., etc. Certainly we want more light to explain difficulties, and a positive doctrine for psychiatry; but it must actually be made up with materials approved by modern science and, so far as possible, by experimentation. We will then be led, perhaps, to find out that general lesions may have existed (which are neither red, yellow, hard nor soft), although their origin may be material or immaterial.

Dr. Winslow has augmented this edition with many interesting cases of insanity relating to historical names. They are and cannot be but "*curious psychological anecdotes*." The chapters on the morbid phenomena of insanity will be perused with advantage, although the *physical symptoms* are not insisted upon sufficiently. Still they are the means by which psychopathists are best enabled to confirm their opinion before courts of law. The last chapter, on the general principles of pathology, diagnosis, treatment and prophylaxis, is the best and most useful part of the book; but it is either the *prolegomena* of a higher treatise or the *resumé* of past science. No reader can be satisfied with mere speculations; for instance, when the learned author says: "Such types of insanity must either be connected with subtle changes in the vesicular neurine, of which we, at present, have *no knowledge*, and which are not even appreciable by means of the microscope, or arise from an altered condition of the *blood, nerve force* or *chemical constituents* of brain matter, of the nature of which physiologists are obliged to confess themselves *profoundly ignorant*." Is the author really thinking that experimental medicine will support such views?

We should like to know exactly the opinion of our author on certain cases of *demonomania*. He relates a case of a young man, and says: "If I were disposed to believe in the *possibility* of Satanic possession, I should cite his case as one *conclusively* demonstrating the phenomena. A very curious relation of what happened lately in the valley of Morzine (Savoy), where a whole village was tormented by *Satan*, being given in the Journal Medico-Psychologique, the question is, whether Satan must be considered as the sum of all subjective temptations to evil, or as a personal and real being." We are the more curious on this point, that the doctor, speaking of the power of of the will, brings Mr. Spurgeon as a witness. This holy man was obliged to put his hands to his mouth to prevent uttering blasphemies, but having consulted a friend, he was told "to care nothing for these thoughts. . . . Their origin was well known. . . It was *Satan* (who says, 'I am likely to lose this man'). . . . But flog them well and send them home." "I did so," continues Mr. Spurgeon, "and conquered the *enemy*." We are, by this method of cure, very near the treatment inflicted on the insane in the middle ages! But again the question is dodged a little further by a quotation taken from Archbishop Secker's lectures on church catechism, who says: "Let thoughts or expressions of the mouth . . . be ever so bad, . . . they are the result of some bodily disease which depresses the spirit and clouds the understanding, and requires *the aid of medicine*."

The conclusion of the book is worthy of a man whose kindness of heart and sweetness of temper are well known. Dr. W. makes an appeal to humanity for a kind treatment of the insane, in beautiful language. As we said in the beginning of this review, the author has forgotten to mention the free air treatment; he has omitted to describe the holy and unselfish cares offered by a strange family to an adopted patient until he is cured! Using the very words of the author, but changing negation into affirmation, we say that the insane is never indifferent to all that is passing around him, when placed in a family of attendants. He heeds the voice of his new friend, or that of the mother of the family, or even that of children, his friends and often his playmates; he delights in the caroling of birds, or in the sweet music of the rippling brooks. The gentle wind of heaven, playing its sweetest melody as it rushes through the green wood, awakens in his mind the consciousness of nature's charms. . . . . Nay, we go further and say, that in such circumstances of love and freedom, the medical treatment has more chance of success; the patient is willing to accept the beneficial action of drugs. All this is properly the *subsidia artis* mentioned by the father of our science. According to Dr. Winslow, our special mission towards the greatest misfortune should be to

> "Fetter strong madness in a SILKEN thread,
> Charm ache WITH AIR, and agony with words!"

and he is quite right.

On the Formation of Aneurism in connection with Embolism or with Thrombosis of an Artery. By JOHN W. OGLE, M.D., F.R.C.P., England. London: 1866.

This interesting brochure deserves attentive consideration and careful study. In 1855 Dr. Ogle injected portions of fibrine into the carotid artery of an ass, for the purpose of ascertaining its subsequent changes. After the animal became in all respects well, it was killed to examine the condition of the various organs. The arterial wound was quite closed and healed, and the heart, lungs, and every part of the animal was found healthy, *excepting one branch of a mesenteric artery, which was found to be the seat of an aneurism*, in which one or two strongyli were coiled up. This result led the experimenter to suppose "that in man a not uncommon cause of so-called spontaneous aneurism in the smaller arteries might be the impaction of coagulated fibrine in the canal of the artery, whether, on the one hand, such mass of fibrine may have been carried thither, having previously been dislodged from the surface of the valves or lining membrane of one of the cavities of the heart, or, on the other hand, may have been originally deposited from the blood (owing, it may be, to its stagnation, determined by some local cause, or to disease of the vessel, etc.), and formed at the portion of the artery affected."

This view was soon strengthened by a case of aneurism of the mesenteric artery observed by Dr. Ogle, and the connection between arterial dilatation and embolism occasionally observed in post mortem examinations. The facts put forward by Dr. Ogle give a perfectly satisfactory explanation of the mode of formation of such spontaneous aneurisms. We feel still more inclined to sustain it, since we have noticed, on two occasions, the above conditions in the anterior cerebral artery after delirium tremens. In a second and quite recent case, the heart and pulmonary arteries, and the inferior vena cava, were filled with a fibrinous clot. The embolic mass plugged the cerebral vessel at a point where two subsidiary branches were given off, and this was the only evident cause of the arterial dilatation.

Atlas of Surgical and Topographical Anatomy. By B. J. Beraud. Illustrated by one hundred plates, drawn from Nature, by M. Bion. Translated by Thomas Hulme, M.R.C.S., England. London: H. Baillière. 1866.

This work is a most valuable addition to our medical literature. It is neatly got up, and the plates, beautifully engraved and faithfully drawn from nature, afford to the practitioner a most reliable guide. The explanation of each plate is followed by practical applications to pathology and operative surgery, presented in a condensed and very useful manner. The ten plates of the first part already published are devoted to the topographical anatomy of the head. The work is to be completed in ten monthly parts, and will be, when finished, certainly a most comprehensive text-book on surgical and topographical anatomy.

QUARTERLY REPORT ON MATERIA MEDICA.

1. *The Use and Abuse of Poultices.* By B. W. Richardson, M.D. (British Medical Journal, May 12, 1866.

In his lectures recently delivered at the College of Physicians, Dr. Richardson made the following remarks on the subject of poultices. "The application of moist heat in the form of poultice to suppurating parts requires, I think, remodeling, in order that it may be placed on a true scientific basis. I am afraid that the common recommendation, 'You must put on a poultice,' is too often among us all an easy way of doing something about which we are not quite sure, and concerning which it were too much trouble to think long. From what I have recently observed, I fear that mischief is often done by a poultice, which might well be avoided. The people have always a view that a poultice is applied to 'draw,' as they say—a term in truth which, though very unsophisticated, is in a sense a good term, for it means what it says. The question for us is, whether it be sound practice to carry out as a general rule the 'drawing' process, either by fomentation or by poultice.

"When a part is disposed to suppurate, the first step in the series of changes is an increased flow of blood through the capillary surface, followed by obstruction, and thereupon by an excess of sensible heat derived from the friction that is set up. Then follows transudation of liquor sanguinis into the connective tissue, and its transformation, under the influence of heat, into what is called purulent fluid. When to the part in this state we apply moist heat, we quicken suppuration, mainly by upholding the temperature: at the same time, we secure the transference of water from the moist surface into the fluids of the inflamed part, by which tension of tissues is produced, and in the end yielding of tissue at the weakest point.

"When the suppurating surface is circumscribed, the rapid induction of the process may be attended with little injury; but when the surface is large and when the exuded fluid is thrown into loose structures where it can burrow readily, the practice, I think, cannot be good to extend the mischief. Hence, in the treatment of carbuncle and phlegmonous erysipelas, it cannot, I opine, be sound practice in the early stage to apply moist heat. Experience also, not less than principle, warrants this conclusion. In cases of carbuncle, especially, I have of late altogether avoided the application of moist heat in the early stages; and, I feel assured, with good results

"But when, in the course of local disease, suppuration is actively established and is naturally circumscribed; when the increased temperature of the part has fallen to or below the natural temperature—then the value of moist heat comes on with full force; then the tension which is exerted determines the escape of fluid at the weakest point of the surrounding tissue, and, when the fluid escapes or is liberated by the knife, the escape for a long period is aided by the application of moist heat.

"The continued application of moist heat for a long time after the escape of purulent fluid is again, I conceive, indifferent practice. It sustains discharge; it sets up unhealthy decomposition of fluids; it produces a thickened, soddened condition of skin, most favorable to the production of sinus; and it retards recovery. When a surface is freely open, and suppurating, dry and not moist heat is the remedy. We are in want in these cases of a simple invention; we require something which we can apply as readily as a poultice, which shall keep up the temperature of the part, and at the same time take up moisture, and gently desiccate, without injuring the tissues."

2. *Medicated Pessaries and Suppositories.* (British Medical Journal, May 12, 1866.)

At a meeting of the Pharmaceutical Society, Mr. H. B. Brady insisted on the necessity for uniformity of form as well as composition of these articles, now made up according to the notions of individual prescribers and pharmaceutists. The best excipient Mr. Brady believed to be cacao butter, with from five to ten per cent. of lard. As to size and quantity, he thought that fifteen grains would be sufficient for a suppository, and two drachms for a pessary. As regards form, he contended that the Minié bullet shape is the most convenient. The best way of forming them is to cast them in metal moulds. In making the pessaries and suppositories, the active ingredients, such as morphia, tannic acid, etc., should first be rubbed with the lard, then added to the cacao butter in a copper vessel set in warm water, well incorporated, and after cooling to the consistence of cream, poured into the metal mould.

3. *Solvent Treatment of Urinary Calculi.* By WILLIAM ROBERTS, M.D. (Medical Times and Gazette, May 12, 1866.)

Dr. Roberts' paper in the last volume of the Medico-Chirurgical Transactions has excited a good deal of attention. The demonstration which he affords of the possibility of dissolving uric acid calculi by a properly pursued and regulated alkaline treatment, constitutes an era in the treatment of these affections. We may state that we have obtained unmistakable success in the treatment of uric acid renal calculus by the large doses of bicarbonate of potash he recommends, and this after the carbonate and citrate of lithia had comparatively failed to produce alleviation of the symptoms. Dr. Roberts has shown that uric acid calculi are susceptible of solution out of the body by the action of alkaline solutions of the salts of potash, and in the body by urine rendered alkaline by the same salts; that the requisite alkalinity of the urine is to be obtained by the administration of citrate, acetate, or bicarbonate of potash, in repeated doses of from forty to sixty grains; that this method of treatment holds out a prospect of success in vesical uric acid calculi which must not be expected from the injection of alkaline solutions into the bladder. With regard to other calculi, he has arrived at the conclusion that oxalate of lime calculi are practically insusceptible to acid and alkaline solvents, but that phosphatic calculi, although insusceptible to the action of alkaline solvents, offer an encouraging prospect for the use of acid injections into the bladder.

4. *Arsenic in Intermittent Fevers.* (Statistical, Sanitary, and Medical Reports of the Army Medical Department. London: 1865.)

Surgeon-Major Turner, of the Bombay Medical Service, in the treatment of intermittent fevers in India, after a sulphate of zinc emetic, and a mercurial purge, trusts entirely to the administration of Fowler's solution, to the extent of half drachm to drachm doses, every second hour, until four, five, or even six drachms have been taken. This he does in anticipation of the expected paroxysm. It may be given to children with perfect safety in fifteen minim doses. Quite as satisfactory results may be obtained as from the expensive quinine, and an enormous expense to Government might be spared. Mr. Turner found none of the cerebral disturbance (quinism) so common after quinine, and believes arsenic to be a powerful "nerve-toner." He also highly recommends it alone, or with scruple doses of camphor, in obstinate menorrhagia and in hemicrania, or brow-ague.

Dr. Broderick is stated to have combined, with the happiest results, quinine and arsenic in the treatment of intermittent fever which had resisted the administration of either drug separately.

We have, for some years, used this combination in obstinate intermittents, and, particularly, in malarial toxæmia, with the best effects.

5. *Iodoform in Cases of Cancer, Syphilis, and Neuralgia.* (London Lancet, Feb. 24, 1866.)

In St. Bartholomew's and the Middlesex Hospitals, London, this remedy has been lately largely used in these diseases. It was first discovered by Serullus, in 1824, and is produced by the action of iodine and alkalies or alkaline carbonates on wood spirit, alcohol or ether. It possesses a powerful odor of a peculiar kind, which has been described by the term "concentrated sea-side." Dr. Greenhalgh has used it in about forty cases. Those most suitable for its employment are where pain is a prominent symptom, and where there is a deposit. He has reason to think, not only that the pain was mitigated by its use, but the progress of the disease actually checked.

It is given in doses of from three to five grains, made up into a pill with bread, two or three times daily. In a case of rheumatic gout, with large deposits about the knuckles, its effects were marked; pain was subdued, and the deposits in the joints disappeared. In epithelioma of the cervix uteri, with fetid discharge, it is employed with advantage as a pessary, in the proportion of one grain to a scruple of cocao butter.

Mr. Nunn, of the Middlesex Hospital, thinks iodoform, as a sedative, given internally, is very uncertain. Applied externally, it alleviates pain. In obstinate syphilitic ulcerations he has found reason to hope that iodoform may prove a valuable remedy. His dose is one grain, in pill. Larger doses produce nausea and sickness.

6. *Vegetable Charcoal.*

Dr. Learned, in the last edition (4th) of his work on "The Causes and Treatment of Imperfect Digestion," is of opinion that charcoal obtained from the more solid vegetable substances, as vegetable ivory or cocoa-nut shell, is superior to that made from lighter materials. The mode of administration which he recommends is that of enclosing the charcoal in capsules.

7. *Subcutaneous Injections in the Treatment of Constitutional Syphilis.* (Lancet, April 7, 1866.)

Dr. Scarenzio has published a valuable article on the above subject in the *Annale Univ. di Med.* After experimenting with various mercurial preparations, he has fixed upon calomel obtained by steam, and combines the salt with glycerine. He quotes eight cases in which marked improvement appeared on the eighth day, after which the eventual cure was very rapid. As a drawback, he mentions a small abscess which formed at the seat of injection in one case.

8. *Mixed Anæsthetics.* (Lancet, April 7, 1866.)

Mr. Andrew Fyfe has found that the vapor of a mixture of two-thirds chloroform and one-third Eau de Cologne is much easier inhaled than pure chloroform; anæsthesia is more quickly produced, and the patient comes round more quickly. He mixes the fluids before using them, and pours them on a handkerchief.

9. *Calabar Bean in Chorea.*

Dr. Ogle, of St. George's Hospital, London, reports in the Medical Times and Gazette, Jan. 13, 1866, two cases of entirely successful treatment of chorea by the calabar bean. The tincture (having the strength of ʒi. of the bean to f℥i. rectified spirit of wine) was administered, beginning with twenty minims three times a day, increasing ten minims at a dose, to fʒj.

Dr. Ogle states that he has other patients under his care who were taking the bean, and that alone, with marked benefit. He proposes to try the eserine, or active principle of the calabar bean, the alkaloid thereof, in chorea as well as in other forms of disease.

In a case of paralysis agitans treated by Dr. Ogle with the calabar bean, he gave 1½ drachms of the tincture three times a day without the pupils being affected by its use or the powers of vision. The patient had been previously treated by sulphate of zinc, belladonna, and galvanism, without result.

10. *Citrate of Soda in Diabetes.*

M. Guyot Danecy (Jour. de Méd. de Bordeaux et Rev. Thér.) says that it is demonstrated that after the sometime use of this salt, and indeed of other salts of vegetable acids, mixed with the food, in place of common salt, the sugar disappears from the urine. During this treatment a small quantity of bread and feculent vegetables may be allowed.

The researches of Wœlher have shown that the tartrates, citrates, etc., when administered in too small doses to produce purging, are absorbed, and their acids are burnt in the interstitial respiratory act, and eliminated in the urine as carbonates. These facts would authorize us to admit that the citrate of soda, without disturbing the primitive acid digestion of the stomach as the alkaline carbonates do, may place the system secondarily under the influence of the alkaline carbonates, which are indispensable to the respiratory combustion of the alimentary glucose.

11. *Alcohol in Hooping Cough.*

Dr. Tripier, in a communication to the Académie des Sciences, recommends a teaspoonful of pure brandy (in young children it should be mixed with its volume of sweetened water) to be given after the evening meal in hooping cough, where the spells of coughing are frequent and violent. It prevents vomiting, and secures a good night's rest. A marked improvement in the general health results.

In the spasmodic cough of many phthisical patients, attended with retching and vomiting, a small dose of pure brandy will often procure immediate relief.

12. *Hypodermie Injections of Muriate of Morphia in Sciatica.*

In the Bulletin Gen. de Thérapeutique Méd. et Chir., April 15, 1866, M. Laurent relates a case of obstinate neuralgia of the right sciatic nerve cured in a few days by subcutaneous injections of ten to twenty drops of solution of muriate of morphia (one milligramme per drop of water).

13. *Atropia in Epilepsy.*

Dr. Giovanni Faralli has published in Le Sperimentale his observations on the treatment of epilepsy by atropine. He never uses it during the fit; begins with one-half milligramme, increasing it to one milligramme, and never exceeds two milligrammes; gives it in pill, made by forming a paste with some inert powder and a solution of the neutral sulphate of atropia; and persists in its exhibition for some time. The results have been quite happy.

14. *Narceina as a Narcotic.* Dr. A. Eulenburg. (Jour. de Médecine Belge, March, 1866.)

Since Cl. Bernard discovered that the narcotic property of narceina was greater than that of the other alkaloids of opium, that it was less exciting than morphia; that the sleep it produced was more tranquil than that by the latter, with absence of snoring; that when given in poisonous doses it did not cause convulsions; and that in animals killed by it there was no rigidity of the muscles—it has been an object of interest to both the physiologist and therapeutist. Dr. Eulenbnrg has made frequent use of narceina, particularly in surgical diseases; he prefers its hypodermic administration, and employs a concentrated solution of the chlorohydrate (gr. j. to f℥j. distilled water); this solution is apt soon to become turbid and must be warmed before used; he injects one-eighth to one-fourth of a grain. For internal administration he employs a slightly acidulated solution of pure narceina (gr. ij. to f℥j. distilled water), which keeps perfectly limpid for a long while; the dose is one-sixth to one-half of a grain. Its administration is never followed by any unpleasant subjective symptom, as cephalagia or gastric derangement. Hypodermically it causes less tegumentary irritation than any other alkaloid. The effects of narceina on the circulation are at first shown by a smaller and diminished pulse, with sometimes subsequent acceleration. Often the number of beats of the pulse are reduced to sixteen or even twelve in a minute. If long continued, its action on the alimentary canal is mildly laxative. Dr. Eulenburg concludes, that for sedative and hypnotic qualities narceina is preferable to any other narcotic. Besides the essential neuroses, its employment is indicated in all maladies where pain is a prominent symptom—as affections of the joints, phlegmons, diseases of the eye, orchitis, cystitis, wounds after operations, etc.; when so given, whether by the mouth or skin, it soothes pain, brings tranquil sleep, and quiet awakening. In hemicrania, supra-orbital neuralgia, and trifacial and crural neuralgias, used hypodermically, it relieves magically.

15. *Treatment of Goitre and Enlarged Spleen with Biniodide of Mercury.* By Professor Maclean, Royal Victoria Hospital, Netley. (Statistical, Sanitary and Medical Reports, Army Medical Department, Vol. v. London: 1865.)

The value of this preparation in goitre was discovered by two officers of the Bengal Army, viz., Major Holmes and Capt. Cunningham. Dr. Mount published in the eighth No. of the "Indian Annals of Medical Science" a narrative of its successful application, Capt. Cunningham and his assistants having cured upwards of 60,000 cases in this manner. Dr. Macnamarra, of the Bengal Army, in No. 15 of the same journal, published the results of upwards of 23,000 cases of goitre treated in the same manner. "I have often," he says, "seen tumors of this kind extending from the chin to a line drawn from between the mammæ disappear after two applications of the drug." The ointment used was prepared by melting three pounds of lard or mutton suet to which, when strained and nearly cool, nine drachms of biniodide of mercury, finely triturated, were added. The ointment was rubbed into the goitre with an ivory spatula for fully five minutes. The patient was then made to sit exposed to the sun as long as he could endure it; some blistering followed; and in the afternoon the ointment was again applied "with a tender hand."

Prof. Maclean thinks that the biniodide of mercury is nearly as useful in the treatment of enlarged spleen as in goitre. In no case has it been inefficacious, and in some the effect of the remedy has been very striking, reducing the enlarged organ with great rapidity. This result has been attained in many cases of a most unpromising character, in men whose constitutions have been much impaired by long residence in malarious regions. No constitutional action of a depressing kind has followed its use.

Prof. Maclean employs an ointment of the strength of the officinal preparation of the British Pharmacopœia. A piece the size of a nutmeg is rubbed in over the affected gland with a spatula. The patient is then directed to sit before the fire until a good deal of smarting is occasioned. About half the quantity is again applied lightly over the tender surface. Some blistering follows, and the raw surface is dressed simply. The process is repeated in about a fortnight or three weeks, according to circumstances. Two or three applications in general suffice, and the local treatment is aided by the use of quinine, iron, and good diet. If the patient is suffering from any form of malarial fever, it must be arrested before any benefit to the local disease by this treatment can be expected.

16. *Wheat Phosphates.*

There is about twelve per cent. of nutritious matter contained in bran, which chemists call gluten. M. Mége Mouries found this substance to consist of a vegetable ferment, or metamorphic nitrogenous substance, which he named *cerealin* and vegetable *casein.* Cerealin, which may be called the active principle of bran, may be obtained by infusing bran in cold water, and precipitating it with alcohol. As contained in bran it is an active ferment on starch and glucose, producing the lactic and butyric changes, but never alcohol. Being a special solvent of starch and gluten, as contained in flour, and a tonic and stimulant to enfeebled digestion, it is supposed to increase the properties of pepsine. Now, from 1840 to 1862 the deaths from phthisis among the inmates of the Ulster Institution for Deaf, Dumb, and Blind at Belfast averaged yearly from 5 to 6 per cent. Various plans were tried to prevent its development without success. In the year 1862 it was determined to try bran as a dietetic agent, combined with linseed, which is known to be an excellent fat producer from its effect on cattle fed with it. The following formula for one quart of soup was used: Take of linseed one to two ounces; fine bran one ounce; water one quart. Boil for two hours and strain; then add beef one to two pounds, and make into a soup, with vegetables, groats, etc. This soup is given at dinner five days in the week to the inmates. It has been in constant use for three years, and during that time the deaths from phthisis have been only one. Bronchial and dyspeptic attacks are also less frequent.

In The Medical Times and Gazette, March 17, 1866, Dr. Tilbery Fox states, that for some years he has been in the habit of prescribing a preparation containing the organized chemical products residing in the outer layers of the wheat grain (*wheat phosphates*), believing that they possessed peculiar nutritive qualities. His experience has taught him that there is something essentially special in the organized phosphates, as compared with those artificially prepared. He thinks it not unlikely that the cerealin, which has an action similar to pepsin, may conduce to the beneficial result. The organized phosphates aid the assimilative function, and food is better digested; iron acts more efficiently during their use.

The mode of preparation is simply to make a decoction of well selected bran, carefully evaporate in a water bath, mix the residue with sugar, and reduce to powder. They may be used in the place of sugar, a teaspoonful being added two or three times a day to the child's food. The cases in which their use is chiefly indicated Dr. Fox found to be chiefly among the young, in whom the assimilative function is weak, in eruptive diseases (particularly of the scalp in infants), in rickets, marasmus, chronic diarrhœa, and in impaired nutrition of all kinds.

17. *Treatment of Disease by Oxygen.*

In The Lancet, March 10, 1866, Dr. R. H. Goolden furnishes the results of some experiments he has been carrying out at St. Thomas's Hospital, London, on the application of oxygen as a remedial agent in the treatment of disease.

The idea of inhaling oxygen was mooted by Priestly soon after its discovery in 1774, and by Sir Humphrey Davy and by Dr. Beddoes in 1804, but not adopted to any extent. Until Dr. Goolden could obtain a proper instrument he used the oxygen water, and the binoxide of hydrogen. The latter he exhibited in one drachm doses, diluted in two ounces of water. He found it to have a marked influence on the biliary secretion, increasing the quantity and improving the quality, and often producing large biliary dejections. At the same time he causes his patient to inhale a mixture of oxygen and air, in the proportion of 1 to 4, from a large vulcanite bag, with a tube, stop-cock, and mouthpiece. Its use is continued for half an hour daily, slowly inspiring at intervals, and filling the lungs as much as possible.

In chronic gout Dr. Goolden has seen this treatment followed by clear urine, great relief, and in some cases cures have resulted. He has latterly found, in carefully selected cases, the Turkish bath a great expeditor of the absorption of enlarged joints, and a valuable adjunct to the oxygen treatment, and that in cases where the Turkish bath alone had previously failed. Lithic acid does not appear in the cutaneous excretion of the Turkish bath, even where it is known to abound in the blood.

Dr. Demarquay, in a recent work, "*Essai de Pneumatologie Médicale,*" treats of the practical value and effects of the inhalation of oxygen. At first the inhalation of oxygen produces a sensation of heat in the mouth, which soon ceases; the skin becomes warm, and sometimes slightly moist; the pulse is quickened, and becomes harder; the appetite returns, with a desire for muscular exercise.

In incipient phthisis, before fever comes on, and the patient is rapidly emaciating, with persistent indigestion, oxygen has a salutary influence. In anæmia, particularly in the chlorosis of young girls, with its attending obstinate anorexia, in the anæmia of persons convalescing from acute diseases and following hemorrages, and especially in that variety met with in the puerperal state, oxygen is a valuable remedy. Where persons are debilitated by long and profuse suppuration, it is useful. In all these affections inhalations of oxygen seem to sustain the forces of the patient, and help towards recovery.

In surgery, oxygen baths may be used to improve the state of slowly healing and ill conditioned wounds and ulcers, and to hasten cicatrization. The observations of Langier, Maurice Raynaud and Demarquay, leave no doubt of its value in senile gangrene of the foot, so long as the circulation is maintained in the plantar artery.

Dr. F. Bricheteau (Bulletin Gén. de Thérapeutique Méd. et Chir., Feb. 28, 1866) has published a paper on the "Therapeutic Employment of Oxygen Gas," in which very minute instructions are given for its administration, with a description of the apparatus of Limousin, of Paris, for the inhalation of oxygen. The gas should be prepared invariably by the decomposition of the chlorate of potash. (*Préparation du Gaz Oxygène pour Inhalations*, par M. Limousin, Pharmacien, *Bullet. de Thérap.*, t. lxviii., p. 167). It is then introduced into a caoutchouc or silk bag, with a flexible tube, which, furnished with two stop-cocks, terminates in a straight glass tube introduced into a water goblet, half filled with water; a second pipe passes through the cork in the mouth of the goblet, and to it is attached another flexible tube, furnished with an ivory mouthpiece. The oxygen, either pure or diluted, passes through the water, and is washed from all impurities it may have. The dose varies with the age and condition of the patient, but ordinarily from thirty-five to fifty pints are given in the course of the day, half in the morning and half in the evening. Even when pure oxygen is put into the receiver, a certain amount of atmospheric air is necessarily respired at the same time by the nostrils. Dr. Bricheteau adds his testimony to the quick and decided improvement of the appetite under the use of inhalations of oxygen. Bérenger-Féraud (*Bul. de Thérap.*, t. lxvii.) has shown satisfactorily the great diminution in the amount of sugar in the urine of diabetic patients during its use.

The testimony so far given in favor of the therapeutic employment of oxygen gas by inhalations and local baths, warrants its admission as an article of the materia medica, and its rational employment in practical medicine.

18. *Digitalis in Full Doses in Pneumonia.*

Digitalis has been strongly recommended in the treatment of pneumonia by Rasori, Tomarsini, Duclos and Hirtz. Dr. Gallard (*Bulletin Général de Thérapeutique Méd. et Chir.*, March 30, 1866) studies its therapeutic action, and the indications for its employment. He believes that it is a valuable agent in the treatment of pneumonia when the febrile action is very intense, and seems to require antiphlogistics, and yet the state of general depression and debility would appear to demand stimulants and tonics—*typhoid* pneumonia.

19. *Chlorate of Potash in Phagedenism.*

Dr. E. Tillot (Bulletin Thérapeut. Méd. et Chir., March 30, 1866) has published a memoir on this subject, and the results of six observations, in which the local application of chlorate of potash by lotion (10 grammes of the salt to 600 grammes of water) and ointment (2 grammes to 30 grammes lard, or 10 grammes to 100 grammes of glycerine) was made to phagedenic chancres and ulcers very successfully. The chancres were all of the variety known as *soft chancre.*

20. *Medicated Milk.* (Gazette des Hôpitaux, April 17, 1866.)

For the past two years a number of the physicians of Paris, especially Arnal, Blache, Cerise, Richelot, Hardy, Manuel, Wertheinber, have used milk as a vehicle for the administration of certain substances, which, although decidedly indicated, were irritants, or which were given with difficulty, especially to children. Dr. Bouyer, de Fursac (Creuse), has solved the difficult problem of lactiform medication. Imitating the processes of nature, he has succeeded in obtaining a milk rich in caseum and serum, coutaiuing the sulphates, phosphates, and chlorides, and readily combinable with iodine, iodide of potash, arsenic, mercury, aud iron.

The preparation of the medicated milk of Dr. Bouyer is based on the fact that, at a certaiu degree of concentratiou, the salts of the serum promptly combine, or form double decompositions, with iodine, arsenious acid, bichloride of mercury, iodide of potassium, and iron. For iodine the milk should be reduced to four-fifths of its volume; for arsenious acid and bichloride of mercury to one-half. The evaporation is then continued until a coucentration of five-sixths is reached. It is claimed that iodized milk is well borne by the stomach, causing no irritation of the gastric mucous membrane, is readily absorbed, can be given in relatively small doses, (a teaspoonful containing about four-fifths of a grain of iodine), and is a peristaltic persuader in persons habitually constipated. It is, according to Dr. Richelot, given with advantage in all the stages of phthisis, except where there is active febrile movement, chronic bronchitis, chronic laryngitis, etc., and where cod liver oil is not tolerated.

Mercurial milk is described as perfectly innocuous, and the wonderful promptuess of its action iu mercurial diseases extolled.

Arsenical milk is recommended as much the most preferable form for the exhibition of arsenic, so valuable a remedy in disorders of the nervous and circulatory systems, in phthisis, and in asthma.

21. *Permanganate of Potash in Acute Rheumatism.*

Dr. James F. Duncan, of Dublin (London Medical Press and Circular, May 16, 1866), recommends the permanganate of potash in acute rheumatism, a remedy which, so far as we are aware, has uever before beeu tried in this disease. He was induced to resort to it from the consideration of its chemical constitution. It holds oxygen in very loose affinity, so as not to combiue advantageously with any other substance. Dr. Duncan believes that the defective oxidation that occurs in acute rheumatism is due to impaired nervous energy, and that the imperfectly oxidized products, whether in the form of sugar or of lactic acid, must accumulate in the blood, constituting in the one case diabetes, and in the other rheumatic fever. The form in which he gives the permanganate of potash is that of Condy's disinfectant fluid, in the proportion of one part to seven of distilled water. Half an ounce of this mixture every second hour. The strength of this preparation (Condy's), as given by Neligan, is 9.26 grains to the ounce.

Subsequent experience must determine whether this new remedy will have any advantage over older and more familiar ones.

VARIA.

LOCAL ANÆSTHESIA BY RICHARDSON'S METHOD.

To the Editor of the New York Medical Journal:

My Dear Sir—At your request, I will state that, not being able to procure in New York the apparatus of Dr. B. W. Richardson, of London, for the production of local analgesia by ether spray,[1] and being anxious to experiment with it in minor surgical operations, I gave, early in April last, Messrs. Geo. Tieman & Co., of No. 63 Chatham Street, a description of the apparatus, with my idea of its principle and mechanism. They shortly afterwards furnished me with an apparatus,[2] which, though provided with an imperfect hand-bellows—I was unable to procure at the time that of Dr. Andrew Clark—succeeded, with a nearly absolute and negative ether, prepared expressly for me by Messrs. Fougera & Van der Kief, Chemists, of No. 30 North William Street, in producing, within one minute, complete local analgesia. Since that time I have employed it successfully in a number of minor operations—the removal of a cancerous tumor of the scalp, epithelioma of the lip, fistula in ano, fatty tumor of the side, insertion of a seton, opening of abscesses, incision of carbuncle, application of nitric acid to chancres, etc. In all, the operations were painless. I can testify to the utility and complete success of the method. It must certainly be regarded as a great boon to surgery, and a means provided by which such operations as I have named, and similar ones, can be done without pain, and without the risk attending the administration of chloroform, or the inconveniences of the inhalation of ether. The life of the patient is not risked, nor is he deprived of consciousness, or made ill for hours. I have no doubt that by improvements in, and the multiplication of, the jets the method may be extended to more formidable operations.

When the ether spray was first introduced in Paris, M. Richet seemed disposed to attribute part of its analgesic effect to the narcotic properties of ether when inhaled; and Dr. Richardson, in his earlier articles, speaks of it as "*narcotic* spray." I am satisfied that it acts solely by the degree of cold it produces—congelation of the tissues by evaporation. The rhigolene of Dr. H. J. Bigelow, of Boston, causes the same effects, and to a greater degree; but, in my hands, not so rapidly as has been claimed for it. I am satisfied with the ether—absolute, of specific gravity 0.720, of negative effect on the tissues, and having a boiling point of 90° to 92°, Fahr. I have no doubt that many disappointments will happen to those who try this method with an imperfect apparatus and impure ether.

Though the employment of intense cold as a means of producing complete local analgesia unquestionably belongs to Dr. James Arnott, of London, who first proposed and used it in 1848, and established that even congelation of the animal tissues may be produced with safety, and that it was an efficient

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1 See New York Medical Journal, May, 1866, p. 156.

2 I have since used the instrument of Richardson, manufactured by Maw & Son, London, and find the instrument made for me by Messrs. Tieman & Co. identical in principle, and differing only in mechanical details. With an Andrew Clark hand-bag it is equally efficient.

and prompt remedy in many diseases—still the ice and salt,[1] and other more powerful frigorific mixtures he recommended, never met with general favor from surgeons, and their use was exceptional. It was reserved for the ingenuity of Dr. Richardson to devise the simple and efficient method of rapidly producing local analgesia or anæsthetic congelation which very properly goes by his name, and promises, from the avidity with which it has been received and the universal success attending its use, to become generally adopted. Lamartine says, somewhere, that when God has an idea to give to the world for the benefit of humanity, he puts it into the head of a Frenchman. Accordingly, M. Le Fort, in a recent number of the *Gazette Hebdomadaire*, tries to show that Dr. Richardson has borrowed his method from a Frenchman, relying, as proof of his assertion, on this passage in the article "Anæsthesiques," by M. Giraldés, in the new "Dictionnaire de Médecine et Chirurgie Pratiques:" "I think that ether or chloroform, pulverized by any of the well known instruments, especially by Luer's, may yield good results."[2] The heaven-born idea was certainly never utilized by the President of the Surgical Society. At the meeting of the Society, March 14, 1866, when the subject came up, and was under discussion, M. Giraldés in the chair, no such claim was put forward; although Le Fort, Foucher, Demarquay, Désormeaux, Laborie, and others, including the veteran Velpeau, were disposed to undervalue the method, and claimed that they had used instruments constructed on similar principles unsuccessfully—probably because the ether spray was too finely pulverized, not thrown with sufficient force, and of inferior quality.

Dr. Richardson has lately invented new compounds of ether. (Med. Times & Gaz., April 28, 1866.) Though the effect of the cold produced by the ether spray is directly hæmostatic, as reaction returns there is bleeding, which, if the wound be too soon closed, is a cause of trouble. The observation of the immediate effects of cold led Dr. R. to think "that if they could be supplemented by a styptic which would spray evenly with ether, and which would take up the constringing action when the vessels began to relax, an important desideratum in both medical and surgical practice would be supplied." He had a solution made consisting of absolute ether, having a boiling point of 92°, Fahr., charged to saturation at a low temperature with tannin, and afterwards treated with xyloidine, a little short of saturation. It ran through the spray tube without blocking, produced good local anæsthesia, and possessed an agreeable odor. This Xylo-styptic-ether-spray may not only be applied to open wounds on the skin, to arrest hæmorrhage after teeth extraction, and, by means of an uterine tube, uterine hæmorrhages from cancerous or other diseases. The styptic ether will keep for any length of time; a small quantity only is required, and it should prove of great use to army and navy surgeons. The other ether compounds are a caustic ether, an iodized etherial oil, and an ozonized ether.

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1 Contributions to Practical Medicine and Surgery, 1864; and London Lancet, May 19, 1866.

2 "Je crois que l'ether, ou le chloroform, pulverisé par un des nombreux instrumens connus, notamment par celui de Luër, pourra donner des resultats avantageux." Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques. Article Anæsthesiques, t. i., p. 254.

I may here mention that I have used the ether spray in cases of sciatica, lumbago, and hemicrania. I look upon the instrument of Dr. Richardson as the best I know of for the exhibition of medicated pulverized fluids, either to the throat or upon the skin; and Dr. J. H. Douglas, of New York, informs me that he too has largely and satisfactorily employed it for this purpose. By the introduction of a short, delicate silver wire into the inner tube any degree of fineness in the dust may be attained.

Having a case of stricture with great irritability of the urethra and troublesome and painful erections, I was induced to try spraying, from a Richardson, the perineum and along the urethra with a strong solution of the bromide of potassium. After two or three applications, the unpleasant symptoms abated and ceased, and there was no subsequent difficulty in exploring the urethra, and going on with the dilatation. In another case, almost similar, the same results followed this plan.

I am, very respectfully,

Your ob't serv't,

7 West 15th St., MEREDITH CLYMER, M.D.

NEW YORK, *May*, 1866.

— The painful duty devolves upon us to announce the death of Dr. Benjamin Vreeland, who fell a victim to yellow fever, upon the coast of Africa, March 20th, 1866, on board the U. S. Sloop of War "Kearsage," of which he was Surgeon.

Dr. Vreeland was born in New York, and commenced the study of medicine in the College of Physicians and Surgeons, New York, when Dr. A. H. Stevens was president of that institution. He at the same time became a private pupil in the office of Dr. Lewis A. Sayre, of this city, where, in connection with his fellow-students, Drs. J. J. Milhau, U. S. A., J. S. Thebaud, J. H. Tucker, and others, he devoted himself to the labors of the profession he had selected with untiring zeal and fidelity.

After graduating with honor and great credit to himself, he obtained the position of P. A. Surgeon, U. S. N., and sailed in the Grinnell Expedition, from New York, in the year 1850, De Haven, Commander, and served faithfully during the period of absence, beloved and respected by both officers and men. After this, he was appointed full Surgeon in the Navy, and sailed with the Japan Expedition in 1852, M. C. Perry, Commander. Here a heavy responsibility devolved upon him, which he proved himself fully equal to, and his conduct there showed him to be possessed both of scientific knowledge and personal influence and force. He returned from Japan in good health and spirits, fully alive to the interests and honor of his profession. He continued to serve his country until March, 1866, when he found himself on board the U. S. Sloop of War "Kearsage," A. D. Harrell, Commander, as Surgeon Here, upon the coast of Africa, he was attacked with yellow fever on the 15th of that month, and died upon the 20th. Being the first victim, he was unable to render any assistance to the other sufferers, and the crew consequently suffered great loss. A short time before his death he called for his commander, and said to him that "he wished him to say to his relations and friends that he was entirely resigned, and not afraid to die." That he desired "that what property he had should go to his sister." Then calmly, quietly, and with firm faith in God's goodness and wisdom, believing all to be right, as He had ordered, breathed his last.

Dr. Vreeland was remarkable for his amiability and sweetness of disposition, which was united with a high sense of the dignity and honor of his profession, so that he was respected as well as beloved by all who knew him.

He always showed great gratitude towards those who had instructed him and fitted him for the responsibilities of his profession—thereby showing a superior character. He has been taken early, leaving his friends to mourn for one who did his duty faithfully whilst in his power. "Honorable age is not that which standeth in length of time, nor that is measured by number of years—but wisdom is the gray hair unto men, and an unspotted life is old age."

— At a meeting of the Medical Society of the County of New York, held May 7th, 1866, the following preamble and resolutions were unanimously adopted, and it was voted that a copy, duly authenticated, be published in the professional and secular prints.

Whereas, death has removed from among us our beloved and revered colleague, Dr. Joseph M. Smith; therefore,

Resolved, That while we bow in devout submission to this dispensation of Providence, we deeply mourn the loss of one to whom many of us have looked as a beloved preceptor, most of us as a tried and safe counselor in difficulties, and all of us as a bright example of a distinguished and good Christian physician.

Resolved, That while we tender to the bereaved family the assurance of our respectful and sincere sympathy, we may be permitted, for their comfort and consolation, to point to the long and well spent life of the departed, the like of which is vouchsafed to few men—for he has died ripe in years, and rich in the love of his fellow-men.

Resolved, That we will cherish the memory of Doctor Joseph M. Smith.

Resolved, That a copy of these resolutions be sent to the family of the deceased.

Thomas C. Finnell, M.D., *President.*
Ellsworth Eliot, M.D., *Secretary.*

BOOKS AND JOURNALS RECEIVED.

Descriptive Catalogue of Fluids and Solid Extracts in Value. Also Concentrations and Affumial Pills Prepared by Henry Thayer & Co. With formulas and receipts. Cambridge, Mass., 1866.

Second Annual Report of the Trustees of the City Hospital, Boston. With Rules and Regulations of the Hospital, etc., etc., for 1866.

Catalogue of the Officers and Students of the University of Michigan, with a Statement of the Courses of Instruction in the various Departments for 1866.

Buffalo Medical and Surgical Journal, January, February, March and April, 1866.

Dental Cosmos, January, February, March and April, 1866.

NEW YORK MEDICAL JOURNAL.

A MONTHLY RECORD OF MEDICINE AND THE COLLATERAL SCIENCES.

JULY, 1866.

ORIGINAL COMMUNICATIONS.

What Effect has the Meat or Milk from Diseased Animals upon the Public Health? By Samuel R. Percy, M.D., Professor of Materia Medica in the New York Medical College; Physician to the Jews' Hospital, etc.

[Prize Essay of the Alumni Association of the Medical Department of Columbia College, 1866.]

Of all the subjects relating to the public health, there is probably none of equal importance to that which I here present, and I am aware that I have a very difficult task before me to give even an outline of an answer to the question. The very little corroborative evidence that we have upon the subject is so scattered and diffused through our medical journals, that it requires an immense amount of labor to collect a single fact. From the carelessness in investigating, or recording, much that is written cannot be accepted as proving any thing, and although to the writer's mind it may appear like evidence of facts, it must be taken by the reviewer as merely conjectural. No people in the world live so well or upon so diversified a diet as the people of the United States. With this varied and mixed diet that we eat, it is difficult to prove that any one thing injures us, and it is seldom that we have an opportunity to verify our suspicions of what we suppose to be unwholesome.

If we find that a person is made sick more than once by taking a certain article of diet, we may suspect the unwholesomeness of that article, and investigate its effects; or if a number of individuals are made sick by using the same food, we may fairly suspect its unwholesomeness. But neither of these instances come very frequently under the physician's notice; hence the facts collected are few in number, and the danger in discussing the subject is that inferences will have too much weight. The students of *sanitary science*—for it has within the last few years become a *science*—have hardly studied this subject; they have turned their attention to other branches, and more particularly to that of the noxious influences of foul air from deficient systems of ventilation upon the public health and *morals*. In this latter study they have found numerous instances in which they have been able easily to trace the sickness to the cause producing it, and they have not been obliged, as in the question I now propound, to trace up with difficulty a few individual cases to their true source.

Again, in the adulterations and deteriorations of farinaceous food we have many learned investigators, and admirable and instructive works have been written pointing out these adulterations and the methods for their detection. But numerous as are the sophistications and degenerations existing in almost every article of vegetable diet, the injury that they produce is infinitely less than the deleterious effects produced by the diseased meat, milk and other animal products that are daily sold in our markets. The changes and adulterations that are so frequently made in our farinaceous food are, by study, easily discoverable by either the eye, the microscope, or chemical tests; but the flesh or milk of a diseased animal that will cause death, if eaten, from the existence of some organic poison, will show but little if any change that is perceptible to any of our senses, or be within the power of discovery by any of our tests.

The subject that I here present has been but very little studied in the United States, probably owing to there having been comparatively but little disease from this cause existing amongst us in comparison to that existing amongst the poorer population of Europe. The laboring population of this country live upon a substantial and nutritious diet, and are thus better able to resist the encroachment of diseases from organic poisons; and as their food is of a better character, it is less infested with entozoa and entophyta, so that we see less of parasitic development. But within the last few years, from immigration, importation, and other causes unnecessary to mention at this place, disorders produced from diseased animal products have become very much more numerous, and the subject is assuming vast importance; and it is necessary that physicians must learn how to prevent, check or cure, and how to detect the diseases produced from these causes. *We need earnest and careful investigators in this almost untrodden field.*

To arrange and simplify the discussion upon "What effect has the meat or milk from diseased animals upon the public health?" we may divide the poisons from diseased animal products into three classes, viz.:

First Class.—Parasitic animals and vegetables inducing diseases in animals; and by means of the products of these animals so infested, communicating the same, or other, or consecutive diseases to man.

Second Class.—Gaseous, vegetable or mineral poisons, absorbed or taken into the system of animals, and so contaminating their flesh or milk as to produce disorders in persons partaking of either.

Third Class.—Animal poisons which render the flesh or milk of animals unfit for human food.

First Class.—There are numerous parasites which infest animals and man, which produce but little if any injury to the health of either; there are, also, entoparasites which have their nidus in certain animals, and so long as they remain in them continue in an imperfect state; but so soon as they enter the system of man, or some other animal, they undergo their last transformation and are developed into their perfect state, and abide for a longer or shorter time within their hosts, some varieties producing mere disturbance, some serious disorders, and some death.

Owing to the great facility with which the germs of some entozoa enter the intestinal canal of animals with the food, we find that many animals are infested with intestinal entozoa which remain only as intestinal entoparasites. The germs of other entozoa enter the intestinal canal with the food, and from thence penetrate through the living tissues, and make their nidus in the peculiar organ they select, reaching the tissues of their nidus entirely by the mechanical process of boring.

Of the ectoparasites infesting either man or animals it is unnecessary for us to speak at this time. Of the entophyta much might be said; we shall have in the present treatise a little to say of them in their proper place.

The entozoa at present known are very numerous, and helminthologists are constantly adding to our knowledge and classifying these parasites.[1] The "Entozoa Hominis" at present known are as follows:

Entozoa Hominis—	Found in the—
Ancyclostomum duodenale,	Duodenum and small intestines.
Ascaris alata,	Small intestines.
Ascaris lumbricoides,	Small intestines.
Bothriocephalus latus; B. Cordatus,	Intestines.
Cysticercus cellulosæ,	Areolar tissue of various organs.
Dactylius aculeatus,	Bladder.
Distomum hæmatobium,	Portal vein.
Distomum hepaticum,	Gall bladder and portal vein.
Distomum heterophyes,	Small intestine.
Distomum lanceolatum,	Hepatic duct.
Distomum oculi humani,	Capsule of crystalline lens.
Echinococcus polymorphus,	Various viscera.
Filaria bronchialis,	Bronchial glands.
Filaria medinensis,	Areolar tissue.
Filaria oculi humani,	Eye.
Hexathyridium pinguicola,	Ovary.
Hexathyridium venarum,	In the venous blood.
Monostomum lentis,	Crystalline lens.
Oxyuris vermicularis,	Rectum.
Pentastomum constrictum,	Small intestine and liver.
Spiroptera hominis,	Bladder.
Strongylus gigas,	Kidneys.
S. bronchialis,	In the bronchi.
Tænia nana,	Small intestine and liver.

[1] Leidy.

Entozoa Hominis—	Found in the—
Tænia solium,	Small intestine.
Tetrastomum renale,	Kidney.
Trichina spiralis,	Muscles.
Tricocephalus dispar,	Large intestine.
Tænia mediocanellata. T. acanthotrias, T. flavopuncta.	
Tænia marginata. T. elliptica.	

It is not intended in the present essay to treat on all these entozoa, but to confine the subject entirely to those that injure the flesh or products of animals, and thereby affect human life or health.

Trichina Spiralis; Thread Worm; Flesh-Worm.—The diseased condition of meat produced by this parasite has been but little thought of by the medical journalists of this country, but has been elaborately investigated in Germany, England and France.

The primary incubative state of this parasite is yet a disputed point with helminthologists, but its injurious effects to man are most frequently produced by eating the flesh of swine, though the trichina has been found in the flesh of beef, in moles, rats and mice. When this microscopic thread-worm exists in pork or other meat, it may be found in almost all the voluntary muscles of the body, being readily seen by the microscope in flesh of either the dead or living animal. If the invasion of the animal by the parasite has been recent, the entozoa will not be so readily distinguished as when the parasite has been longer within the muscles. Virchow states that it takes about three months for the trichina to arrive at that point of development to become encapsuled. The larvæ of this parasite is apparently sexless, but when the flesh of an animal containing it reaches the human stomach it almost immediately becomes active, and acquires sexual development. It is not oviparous, like the tapeworm, but is viviparous, and breeds multitudinous swarms of young trichinæ within the intestinal canal; these young trichinæ in a few hours perforate the intestines, enter into the blood vessels, and disseminate themselves to every part of the body, preferring as their habitat the voluntary muscles, though they have been found in the muscular structure of the heart. It is said by those who have diligently studied their habits, that the imperfectly developed trichina, that is, those that have not existed long enough in the flesh to have become encapsuled, do not breed immediately upon entering the stomach as the encapsuled parasite does, but that some time elapses during which it becomes rapidly developed, and then its swarms of young are produced. It is the young trichinæ only that enter the muscles, the old ones die and are passed out of the intestines. The amount of irritation produced by their infusion always causes sickness and sometimes death. Numerous experiments have been tried upon inferior animals by feeding them with the flesh of animals containing encapsuled trichinæ, and in all instances young trichinæ have been found in the muscles of the animal so fed, both during life and after it has been killed.

These parasites are not destroyed in the flesh of a dead animal by freezing, drying, salting or smoking, nor by any thing but a thorough and perfect cooking of the whole mass. If the outside of a slice of such meat is well cooked the parasites in such parts are destroyed; but within, where the meat is underdone, they are still in a state fit for active development as soon as they reach the stomach of man or animals.

The symptoms produced in man by eating the flesh containing these parasites are peculiar and very painful. A few hours after partaking of a meal containing these trichinæ there is a sense of nausea; sometimes a portion of the meat is rejected by vomiting; generally there is diarrhœa, with gastric irritability and soreness over the whole abdomen. There is a feverish condition of the system, with general irritability and prostration. Soon there is soreness and pain over the whole body, the person is unable to keep still, but yet experiences soreness, pain, and lassitude in every movement. If the diarrhœa has been early and profuse, the symptoms are not generally so severe as where there has been no diarrhœa, as undoubtedly by this discharge myriads of trichinæ are expelled, leaving fewer to enter the muscles. The after symptoms of those who have no diarrhœa are generally more severe, and more of such patients die—sometimes after a few days, and sometimes after weeks of lingering sickness. In the early stage of their invasion the trichinæ enter the muscular fasciculæ, and to some extent destroy the striated muscular fibres; after a period of about three months they become encapsuled, and remain in this state for many years. In the encapsuled state the parasite seems to remain dormant, and inflicts no further injury upon its host; but if the flesh containing it is eaten by another animal, broods of young trichinæ are at once developed in its stomach, and again find their nidus in the muscular structures. It has been ascertained that they may exist in this encapsuled state during the lifetime of their host. The following instance in point is highly interesting:

"Virchow cites one striking instance which exemplifies, in the clinical experience of one person, the history of trichinæ disease from the time the subject of it first became so. Last summer a person (the instance referred to) was being operated on by a noted surgeon of Berlin for swelled neck. During the operation the bared muscles were seen to be filled with the characteristic shells or cysts of trichinæ, which can be recognized with the naked eye. The patient related, in reply to a question whether he had ever been very sick, that in the year 1815, with the other members of a commission for the inspection of schools, he ate a meal of ham, sausage, cheese, etc., at an inn. All who ate of these provisions were soon after taken sick, and, except the relator himself, died. Suspicion fell on the innkeeper. A judicial investigation was held, but without result. Here the survivor might have gone to his death, and yet nothing have ever been known in his particular case of the infestation by trichinæ which had killed his six associates, although he survived, had it not been for the knowledge of the animal that science had gained years after the fatal meat was eaten."[1] Many similar instances of such poisoning are recorded throughout Germany before the trichinæ was known, and in most instances the cause of death or sickness was attributed to ham poisoning.

A well marked instance of trichina disease occurred in the city of New York a few years ago. A whole family had eaten

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[1] American Medical Times, April 10, 1864. Dr. P. K. Brown.

of a ham purchased in Grand street, and a few hours after they were taken with nausea, vomiting, purging, soreness and prostrating sickness. They supposed they had been poisoned. Drs. Schnetter, Jacobi and Valliere were called, recognized the disease, and treated it scientifically. One of the children died, and a post mortem examination was held. Trichinæ were found in the muscles. The ham was examined by the microscope and found to be filled with trichinæ. A portion of the ham was given to me by Dr. Schnetter, and although I could not see any trichinæ with the unaided eye, I found them in very large numbers with the microscope, most of them encapsuled. Dr. Schnetter also found trichinæ in the muscle of one of the living patients. The remaining members of this family, though sick for some time, have, to a great extent, recovered their health.[1]

It has been supposed by many persons that trichinæ exist only in swine, and that man always derives them from this source; but several helminthologists have proved that they exist also in the mole, the rat, and the mouse, and there have been cases of the symptoms of trichinæ poisoning in man from eating the *flesh of beef cattle*. There is, I think, but little doubt that beef cattle are frequently infested with trichinæ, and when we consider the way in which many of our beef cattle are fed, it would seem strange if they were entirely exempt from the disease. Virchow has demonstrated that they may exist in cattle, if swine flesh infested with trichinæ is fed to the cattle. The following case came under my observation during the past winter.

A family, consisting of father, mother, and four children, all in perfect health, partook of dinner consisting of bread and roast beef only. About fourteen hours afterwards all the children were attacked with vomiting and purging, abdominal pains and irritative fever. I saw them about sixteen hours after. They had eaten nothing since; they all complained of great soreness in the abdomen; the pulse was quick and small; the skin was hot and dry, and there was great prostration. I

[1] Transactions of N. Y. Academy of Medicine, vol. iii., parts one and two. J. C. Dalton.

gave each of them a full dose of castor-oil to fully remove the offending matter, and allowed them weak brandy and water to drink, as they were very thirsty. I learned that they had eaten nothing at or since dinner but meat and bread; the bread was home-made and such as they had eaten the day before and the meal previous. The mother said she always cooked her meat rare, as she thought it more nutritious, and they liked it better, and this piece was rather rarer than usual. The father liked his meat well done, and had eaten both of the outside pieces; he was not sick. The children were sick and confined to their beds for several days, complaining of great soreness and general malaise. The mother had no sickness or diarrhœa at the time of eating the meal, but on the fifth day after she was taken with faintness and diarrhœa, and she suddenly miscarried at about the third month of pregnancy. The attendant threw away the fœtus, so that I had no opportunity to examine it. I examined a portion of the placenta, in which I found a few trichinæ. I examined a small piece of the beef of which they had all eaten, and discovered trichinæ in it, but nothing like in such numbers as I have found in pork. It has also been examined by one of our most celebrated microscopists, Mr. Gavit, and preparations made of it. I have no doubt that they existed in the fœtus more abundantly than in the placenta, and were the cause of the death of the child and its abortion. We know that young pigs are infested with cysticerci cellulosæ, whose dams are diseased with measles. I took pains to ascertain where this meat was purchased, and I found they had obtained it from a small butcher in the neighborhood; he told me he had purchased a quarter at Washington Market and upon inquiry of the person whose name he gave me I learned that it came from the distillery stables at Newtown, Long Island.

It seems to me more than probable that many of the cows in these distillery stables are infested with trichinæ. We have before stated that they have been frequently found in rats and mice. The numerous rats and mice living about these stables are probably more than usually omniverous. They frequent the thickly settled shanties and pig-pens of the attendants around these distillery stables, and they swarm in the troughs of these swill-fed cattle, leaving quantities of their exerements behind them, which are eaten by the cows, and if, as is more than probable, that trichinæ exist in the excrements, the cows must become infested with them. I have never heard of this kind of beef being examined with reference to the trichinæ, and the instance I have quoted is the only one, that has come under my knowledge. It is no proof that it does not exist amongst these cattle because physicians have not seen and reported cases of such poisoning. This disease is not well understood by the majority of physicians, and its study is of modern date amongst us, and, in consequence, numerous cases of poisoning by trichinæ in pork and beef are overlooked and attributed to some other cause. Of the cases above reported, it will be seen that the father who ate the well cooked portion of the beef escaped without any sickness, but that every other member of the family suffered severely, and the mother lingered almost to the point of death for many weeks, and has not been well since.

There are numerous well authenticated instances of poisoning by this parasite in the European medical journals. The following, from the *British Medical Journal* of January 16, 1864, is perhaps the most fatal of any recorded: "A few months ago there was a festive celebration at Hettstadt, a small country town near the Hartz Mountains, in Germany. One hundred and three persons sat down to dinner, and having enjoyed themselves *more majorum*, separated and went to their homes. Of these one hundred and three persons, mostly men in the prime of life, eighty-three are now in their graves; the majority of the twenty survivors linger with a fearful malady, and a few only walk apparently unscathed among the living, but in hourly fear of an outbreak of the disease which has carried away such numbers of their fellow-diners. They had all eaten of a poison at that festive board, the virulence of which far surpasses the reported effects of aqua tophana, or the more tangible agents described in toxological text-books. It was not a poison dug out of the earth, extracted from plants, or prepared in the laboratory of the chemist. It was not a poison administered by design or negligence; but it was a poison unknown to all concerned, and was eaten with the meat in which it was contained, and of which it formed a living constituent. The remnants of sausage and of pork employed in the manufacture of the *röstewurst* (a dish which formed the third course of the dinner) were examined with the microscope, and found to be literally swarming with encapsuled trichinæ or flesh-worms. From the suffering muscles of several of the victims small pieces were excised, and under the microscope found charged with embryonic trichinæ in all stages of development. It could not be doubted any longer that as many of the one hundred and three as had partaken of the *röstewurst* had been infested with trichinous disease by eating of trichinous pork, the parasites of which had, at least in part, escaped the effects of smoking and drying. This awful catastrophe awakened sympathy and fear throughout the whole of Germany. Most of the leading physicians were consulted in the interest of the sufferers, and some visited the neighborhood where most of the afflicted patients remained, but none could bring relief or cure. With an obstinacy unsurpassed by any other infectious or parasitic disease, trichiniasis carried its victims to the grave. If it be remembered that one ounce of meat filled with trichinæ may form the stock from which in a few days three millions of worms may be bred, and that these worms will destroy in the course of a few weeks not less than two millions of striated muscular fibres, an idea of the extent of destruction produced by these parasites can be formed. Most educated people in Germany have, in consequence of the Hettstadt tragedy, adopted the law of Moses, and avoid pork in any form."

As this trichina disease is but little understood in this country, an abstract of a most interesting case, given by Dr. N. Friedreich, of Heidelberg (Virchow's Archiv. Band xxv. Hefle iii. and iv., p. 399), will be especially instructive, and will well repay a careful study.

"G. M., a robust, healthy man, æt. 22, whose trade brought him into connection with sausage meat, pig's meat, etc., had been working very hard, when suddenly he experienced an excessive weakness in the legs, and excessive painfulness in the muscles. This was accompanied by headache, heat of the surface, thirst, anorexia and sweating. These symptoms increased, and shortly afterwards diarrhœa and considerable pain and stiffness in the muscles of the arms, loins and back came on. No lung symptoms or vertigo existed.

"When first seen at the hospital, April 24, the pain in the muscles of the limbs and neck was very great, especially on pressure. The muscles had a hard, tense, india rubber like feeling, and were very turgid, and attempts to raise himself in bed produced great pain and stiffness in the back. Power of swallowing, chewing and speaking was unaffected, and the tongue appeared normal in every way. The abdomen and its organs, as well as those of the chest, appeared natural. Well marked febrile symptoms afterwards came on, with headache and vertigo, thirst, loss of appetite and furred tongue. At first there was no albumen in the urine. There was delirium, restlessness and diarrhœa; then intense debility and epistaxis. The pupils remained natural; special senses natural. Subsequently diarrhœa, with many portions of *tænia* evacuated. The pain and soreness of the muscles increased, and uprising in bed became impossible. The elbow joints became somewhat flexed, and much pain was felt on attempts to straighten them; the lower limbs were outstretched. The sweating became profuse, then hoarseness and some dry cough came on, with pain on speaking. The headache and thirst then became less. No exanthematous rash or any enlargement of the spleen existed, but a slight amount of albumen was then found in the urine. During most of this period (ten days) the pulse ranged from 100 to 114. Subsequently loose stools were passed, and about this time the pulse became rather lower, but the weakness and pain of the muscles continued to increase. The sweating continued, and much miliary eruption, containing clear fluid, existed on the skin, but nothing like roseola; afterwards numbers of small pustules, filled with a milky fluid, and surrounded with a red basis, arose on the breast and abdomen. Slight diarrhœa continued. The patient then had *picro-nitrate of potash* administered three times a day. The pimples and pustules extended over the back, the urine became free from albumen, the tongue natural, headache disappeared, and sleep and appetite became natural. A minute portion of the muscle was then extracted, by means of Middledorpf's harpoon, from the calf of the right leg, and in the portion removed, which was hardly the size of a hempseed, seven partially spiral trichinæ were counted between the muscular fibres. The picronitrate of potash was continued. On 9th May the pain and soreness of the muscles had somewhat diminished, especially in the arms; movements and sitting up in bed were also easier, but the tense state of the muscles continued, and also the contracted state of the elbows, but attempts to straighten them were less painful. The sweating and vesicular eruption continued, and in addition large pustules, the size of a hempseed, with red circumference, came out in different parts; a black spot showed itself on the right side of the back, which was very painful and surrounded with dark redness; in the neighborhood of this was a boil of the size of a pea, from which, on pressure, a quantity of brownish pus was squeezed. On examination of this purulent matter, in addition to pus-cells, blood-corpuscles, dead connective tissue, etc., *a large, well developed trichina was discovered.* Œdema of the ankles came on. An improvement took place in the condition of the muscles as respects stiffness, tension and pain, and also in the contraction of the elbow. The miliary and pustular eruption continued in fresh crops, and a small, very painful boil came out over the right clavicle. The black spot on the back had left behind a clear ulcer. The conjunctiva and skin of the body were colored of a yellow hue by the medicine. The symptoms continued in all respects to improve, but still a little albumen remained in the urine, which had become very dark colored by the medicine, which was continued. After a time fresh crops of eruptions ceased to appear, the ulcer of the back healed, the sweating became less, and the general health improved vastly.

"No trichinæ were found on a second exploration of the muscles of the leg with the harpoon; but on a third and later operation *a living trichina, not yet encapsuled, was discovered.* The medicine was discontinued for a time, when the yellow color of the urine and conjunctiva diminished quickly. Again a portion of the muscle of the leg was removed, without any traces of trichinæ being found; but at a still later exploration the parasite was met with. On 30th June the patient left the hospital, feeling well."

In commenting on the details of this case the author notices the absence of chills in connection with the commencing febrile symptoms, and draws attention to the *course* of the symptoms, the muscles of the legs becoming affected prior to those of the arms and back; and also during recovery the improvement in the legs taking place last of all—the legs being to a certain degree affected for a length of time after the other limbs had returned to their natural state. These symptoms are referred to irritation of the sensitive muscular nerves and hyperæmia, with convulsive excitation of the muscular tissue, brought about by the presence of the young trichinæ—the microscopical examination of the muscular fibre removed by the harpoon, more or less in a fatty condition, indicating a regressive disturbance of nutrition. The hoarseness is attributed to the presence of trichinæ in the muscles of the larynx. Observations have been made by Bischoff, Henle, Virchow, and Leuckart, as to the presence of these parasites in this part. The persistent diarrhœa may be attributed to irritation of the intestinal mucous membrane by the trichinæ, but the stools were not examined by the microscope. The excessive sweating is to be associated with a determination of blood to the vessels of the skin, owing to the hardness of contraction of the muscles, and seems comparable to the profuse sweating of tetanus.

The author also looks upon the case as proof of the existence of a trichinous "pustulosis and furunculosis," and explains the abscess of the side of the chest, in which the trichinæ were found, by supposing that the parasite had escaped from the muscle into the subcutaneous tissue, and set up inflammation—noticing the preference which (as has been shown by other observers) the parasite shows for the muscles of the thorax, and for peripheric or superficial parts.

As respects diagnosis of trichinous poisoning, the disease is to be known from acute rheumatism by the *extent* over which the muscular pain exists, also by the freedom of movement of the joints; from tetanus by the absence of trismus, and of the exaltation of reflex action; from typhus by the absence of cœcal pain, of enlargement of the spleen, of the special eruption, of the dry tongue, and of the head and lung symptoms. It is also to be observed, in this instance, that the patient had been latterly engaged in the killing of pigs, often placing the bloody knife in his mouth, and eating portions of the uncooked meat.

As respects the therapeutic bearing of the case, it seems that Friedreich was induced to try the picro-nitrate of potash from having previously observed the manner in which, when given as a substitute for quinia in ague, it quickly tinged the conjunctiva and skin of yellow color. Supposing it must have the power of coloring human tissues, he was led to give this intensely bitter remedy, with a view to its immediate action upon the trichinæ whilst yet existing in the intestinal canal.

Too much confidence must not, I think, be placed in this remedy of Friedreich's—the picro-nitrate of potash; for it will be remembered by those who have studied this disease, that after the trichinæ become encapsuled there is a gradual amelioration of all the symptoms, and it will be seen that at his last exploration the parasite was still met with.

Friedreich has not examined the patient since to ascertain if the trichinæ are still to be found; should he do so, probably the result might be like that recorded in the following case: "While removing a cancroid growth from the neck of a patient, arrived from the country, Dr. Langenbeck remarked that the platysma presented an unusual appearance. Microscopic examination showed that it contained an immense number of dead trichinæ, contained in calcified capsules. Inquiry was made as to the circumstances under which the immigration had probably occurred, and the following was the result: In 1845 a commission, composed of eight persons, went to a town, in the district of Lansitz, to inspect the schools. A collation composed of ham, sausages, cheese, roast veal, and white wine having been served to the commission, only seven of the members partook of it, the eighth was absent at the time, and only took a glass of red wine at the dessert. Three or four days afterward the seven who had partaken of refreshments were seized with intense diarrhœa, pain in the neck, and œdema of the face and extremities. In four the attack proved fatal, and three others, including the individual on whom M. Langenbeck had operated, only recovered after a tedious illness. Rumors of poisoning spread about, as may readily be imagined. An investigation was ordered, but the result was negative;

the public, however, did not so readily get quit of their suspicions, and the landlord of the hotel, where the collation had been served, soon found himself without customers and obliged to emigrate." (Deutsche Klinik.) There are other cases reported equally as corroborative as this of the deadly poisonous invasion of the trichinæ, of the ultimate recovery of the patient, and the discovery of the parasite in the muscles after a lapse of many years. The trichinæ, in most of these cases reported, were still in a living condition, and ready for remultiplication if the necessary nidus were only furnished them.

There are numerous cases of trichinæ poisoning now recorded in the European Medical Journals—in fact, in some parts of Germany so many persons have been attacked with it that the disease has been incorrectly called "epidemic."

The trichinæ are not destroyed by either salting, drying or smoking meat containing them. Some helminthologists have asserted that it is destroyed by a temperature of 145°, F., but I think that this must be a mistake, and I believe it requires a heat but little below boiling point (212°, F.) to destroy its vitality. One person whom I know, who was poisoned by eating a boiled ham containing them, said that the meat did not appear to be underdone. Several persons who were poisoned by them from eating a boiled ham on board one of the European steamships, said that the ham appeared to them to be but little underdone, yet living trichinæ were found in the muscles of some of these individuals by Dr. Voss of this city. The beef that I before spoke of, containing trichinæ, did not appear to be very rare. It is, of course, difficult to arrive at any facts as to the amount of heat to which the inside parts of a ham are subjected by boiling the whole ham, yet it would appear as though all parts of it must have been subjected to a higher temperature than 145°, F., in boiling the whole ham, and giving it the external appearance of being cooked. The only safe preventative against poisoning from trichinous flesh is by thoroughly cooking every portion of it.[1]

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* For a full description of this parasite, and a number of most accurate microscopic drawings, see Professor J. C. Dalton's "Observations on Trichinæ Spirales," in the Transactions of the N. Y. Academy of Medicine.—Vol. iii., parts 1 and 2.

Tœnia Echinococcus; Echinococcus Polymorphus; Tœnia Granulosa.—Although this parasite is exceedingly destructive to human life in some parts of the world, we are but little acquainted with it in this country, and cannot therefore speak of it from personal experience. What little we have to say of this entozoa is condensed from European medical journals.

In its perfect state this parasite is a small tapeworm, which lives in the intestines of the dog; it is about one-sixth inch in length, with four joints and a single head, armed with four suckers and a double crown of hooks. In this, its perfect condition, it is very small, but in its larva or hydatid state it grows from the size of a grape to that of a man's hat. In its hydatid condition it infests man and domesticated animals, and presents an aspect not unlike the toy air-balls with which children play. It is furnished with hundreds, sometimes with thousands of heads, each one of which is capable, under favorable circumstances, of becoming the perfect small tapeworm.

"It is in Iceland that the saddest experience exists as to the alternate generations of the tapeworm. There the diseases which are due to the various stages of various kinds of tapeworm prevail to an enormous extent, among both men and cattle. Dr. Arthur Leared says, on the authority of Dr. Hjaltelin, of Reykjaoik, that a fifth part of the human mortality in Iceland is caused by hydatid disease. And how great is the influence which the dog exerts as an intermediary in propagating such disease, cannot be better illustrated than by the fact of Dr. Leared's having suggested, as one of his two measures for preventing the human hydatid disease, that all the dogs of the island should be medically treated for tapeworm. The evidence against the dog in this matter (says Dr. Leared) rests upon numerous experiments, conducted under circumstances leaving no doubt that tapeworms were produced by feeding them on fresh (hydatid) bladders. The conditions necessary for the propagation of the worm are nowhere so complete as in Iceland. The farmers kill their own meat, and the offal frequently containing living (hydatid) bladders is the food of dogs. Abundance of mature worms are thus produced. Again, the whole country is one vast pasture, and dogs are universally employed in managing the sheep. These dogs shed everywhere segments of tapeworms, the eggs from which are diffused by rain and melted snow. Each segment is filled with innumerable eggs, invisible to the unassisted eye, which are not set free in the intestine of the dog, but in the outer world, by the decay of the case containing them. It is impossible to say to what extent these eggs preserve their vitality, but so resistent is the outer shell that I have found them, by examination with the microscope, quite intact after having been steeped for twelve hours in strong sulphuric acid. It seems that desiccation is most fatal to their vitality, and there can be no doubt it is for this reason that sheep are much less liable to staggers in dry seasons, and on high grounds, than when the season is wet or their feeding grounds are low and damp. These eggs, finding their way into drinking water, or adhering to articles eaten raw, as bilberries, or the stalk of the angelica, are swallowed by men. The hands are even liable to be infected by contact with the grass, so that the eggs may easily be swallowed with ordinary food, or from casual application of the hand to the mouth." The plan which Dr. Leared recommends is that all the dogs of Iceland should be treated at the same time with doses of kamala, an Indian vegetable drug, which is a cheap, tasteless and efficient remedy against tapeworm.

One-fifth of the annual deaths among the population of Iceland is owing solely to this echinococcus disease; and the Icelandic physicians calculate that there are at least 10,000 patients under treatment at the same time for this entozoic poisoning. This is truly appalling.

The question has been frequently asked, by a thoughtless public, what has this to do with diseased meat? It appears that the disease which carries off so many human beings annually is caused by the eggs of a small tapeworm which infests the dog, and developes only to its larval state in man; human beings don't eat dogs! No, but dogs eat meat which is infested with the larvæ of this parasite, and thus keep up the chain of "alternate generation." Man suffers equally with animals; in fact, from his delicate nervous organization, more than they. We here, then, have proof equally as strong as in trichinous poisoning, that man's life is sacrificed by diseased meat—diseased because infested with parasites. It is said that this disease does not exist in this country. I think it would be more safe to say that it has not been recognized; but even if it does not, we do not know how soon it may be before we may be called upon to treat it, and find some remedy for it. We have sporadic outbursts of a disease called *spotted fever;* it has not been recognized as an entozoic disease, and yet I venture the assertion that it will yet be proved to be such. I make this assertion from the symptoms, not from having recognized any entozoon.

Cysticercus Cellulosæ; Bladder Flesh-Worm; Measles of the Pig.—This animal parasite infests the muscles of all parts of the body of the pig, but is found most frequently in the muscles of the tongue, loin and neck; occasionally it is seen in the muscular substance of the heart. "It is seen as an ovoid bladder, from two to four lines in length, formed by a thin transparent membrane, and inclosing at one extremity an opaque body of a white color. This is the worm coiled up, but which, when unfolded, exhibits a head, neck, and pear-shaped vesicular tail. The head is armed by a crown of barbed hooklets, around which are placed four sucking mouths, and the neck is formed of a series of rings, which gradually loose themselves posteriorly on the dilated and bladder-like tail. In the interior of the worm are a number of microscopic corpuscles. The average diameter of these bodies is $\frac{1}{1500}$ of an inch, and their usual form that of a flattened circular disk, but they vary both in form and size. During the life of the pig the bladder inclosing the worm is fully distended with a pellucid fluid, but after the pig's death a portion or all of the contained fluid escapes into the surrounding tissues."

It has been proved by studious and careful helminthologists that this cysticercus is the scolex or imperfect parasite of the tapeworm, *tænia solium*, and that when a living cysticercus reaches the intestines of man and of some other animals it becomes developed into its perfect state, the tænia solium; that it may remain for an indefinite length of time within the intestines of its host, producing eggs which are passed out with the feces, and are again developed as cysticerci if they are taken into the stomach of swine. Experiments have also been made showing that the cysticercus is developed in the muscle of the pig if it is fed with the egg-bearing joints of the dog tapeworm, the *tænia serrata*, and that this tænia serrata is found in the intestines of the dog that is fed on measly pork; but that the cysticercus is not generated in the muscles of the dog by feeding it upon the eggs of the tænia solium or serrata. After a certain time each joint of the tænia contains many thousands of eggs, and these are voided by the dog and by man in large numbers; they are so small that when dry they appear as fine dust, and are thus easily mixed with the food of the pig, and thus become converted into cysticerci. Where the pigs and dogs run at large around the houses of the peasantry, the pig devours the excrement of both man and the dog, and undoubtedly in this way frequently becomes measled. The tænia solium is not at all uncommon in inhabitants of this city, and although I have not found the cysticercus in man, there are numerous instances throughout the European medical journals where the cysticercus has been found in the brain, the eye, and in several of the muscles of man.

When pork is what is called "but slightly measled," that is, when but few of these parasites are scattered throughout the body, the parts of the flesh not infested do not differ in appearance from healthy pork, and no change is discovered upon more minute examination; but when the cysticerci exist in large numbers and are thickly scattered throughout the muscles, the whole flesh has a diseased appearance, being watery, soft and pale, and upon minute examination exhibits the condition known as fatty degeneration. If an animal in this state is not killed it soon dies from general fever and debility.

Leuckart has traced in the rabbit the passage of the embryo tapeworm into the blood vessels. The eggs are quickly hatched in the stomach, and the young tæniæ bore their way with their lancet armed heads through the mucous membrane into the blood vessel. With the blood, they are carried in the rabbit to the liver, to be there arrested and developed into the hydatids or cysticerci. In the lamb, the young tæniæ are carried with the blood to the brain, where they fix and grow into the cystic parasite named *cœnurus cerebralis*, and within two weeks of the commencement the lamb is affected with the "staggers."

Kuchenmeister says that the hydatid in the brain of the sheep and lamb which causes the "staggers" is the embryo of a tapeworm, also inhabiting the bowels of the dog, and known as the tænia cænurus. But Fleming says, "the cystic entozoa or hydatids do not form a separate class of parasites, but are merely the cestoid entozoa or intestinal worms in an imperfect state. Each species of tapeworm has its corresponding cyst-worm; but the same embryo tapeworm may produce two or three forms of hydatids, according to the species of animal and part of the body in which it may chance—or rather, I should say, mischance—to be developed, for the hydatid is essentially abnormal both in form and size, and these entozoa obtain their perfect growth only in the intestinal canal, their proper dwelling-place. The young tapeworm, swimming in the blood, is fixed probably by getting into a capillary too small for its passage; and the reason of its being arrested by preference in the muscle of the pig, brain of the sheep, and liver of the rabbit, may perhaps be found in the relatively small size of their capillaries."

Cystic entozoa have been found in the flesh of nearly all animals.

The *tænia solium* undoubtedly is most frequently developed in man from eating meat in an uncooked or raw state, and it is asserted by many authors that the cysticercus is destroyed in the process of salting and curing; but it must be remembered that but very few persons ever eat raw pork until after it has been salted, and at least partially dried and cured. Proper cooking undoubtedly always destroys the hydatid; but I think we have evidence that meat which has been salted, cured and cooked to a moderate extent will still produce living tæniæ if eaten. There are many such cases on record. I can also give one from my experience within the last few months. During the spring of 1863 a gentleman of New York sailed for Liverpool. Upon his arrival he ate very heartily of boiled ham; a gentleman who met him at the hotel, pointed out to him in this ham numerous spots of measles, and told him he would be troubled with tapeworm. He remained in England some months, and when he returned home came to me complaining of all the symptoms of tænia, and stated that he had occasionally passed a few joints. I gave him some kousso; he brought me about three feet of tænia, but it evidently was but a part, not a whole of the entozoa. But as he felt easier he took nothing else until last March, when he again complained of worse distress and pain than ever. I gave him a mixture composed of one ounce of peeled pumpkin seed, made into an emulsion, to which I added a scruple of cowage and half an ounce of spirits of turpentine. This was given after fifteen hours' fast, and was followed in two hours by a brisk purge of compound jalap powder. This expelled thirty-one feet of tænia solium—evidently the whole worm. He has not had a sick day since. In this parasite, then, as well as with the trichinæ, it is necessary to cook the meat most thoroughly to prevent infestion.

No prudent individual, in view of the facts here presented, would ever eat "measly" pork, however slightly diseased; nor do I think that any well informed and prudent physician will deny that such meat is unwholesome food for man.

As my time is very limited I cannot, at present, state more in detail the various *parasites* that infest the flesh of the animals upon which we live, and in turn colonize the human body with the same or lower forms of larval animal life, producing disease in all instances, and frequently death. We have seen that the minute trichinæ, too small to be detected by the unaided eye, inhabiting the flesh of swine and of beef, infest the human muscles, and cause severe, and prostrating, and painful sickness if but a few of the parasites reach the human stomach from the meat, and that where they are swallowed in large numbers death is nearly always the result.

The small tænia echinococcus, in its perfect state, becomes, in its larval state, a large cyst; and, as we have shown from the statements of watchful helminthologists, ten thousand persons are sick at the same time with this disease in Iceland. The cysticercus cellulosa, the larva of the tænia solium, infests the flesh of the pig and other animals, which, in its turn, by alternate generation, diseases man. The same may be said of the effects on horned cattle of the larva of the *tænia medio-canellata* and *tænia marginata*. The brain disease of sheep and lambs is produced by the larva of the tænia cænurus. The disease in the livers of the same animals, usually called the "rot," is due to numerous adult oviparous fluke-worms; the distoma and the strongylus cause disease of the lungs in calves and lambs. Although in some of the latter of these we cannot yet plainly point out the "alternate generation," we know that the flesh of animals infested with these entozoa is unwholesome as human food. "And although this opinion may be assailed on the ground that bad meat is consumed to a large extent, and that no hurtful effects have been traced to its employment, we cannot trust to common experience in a question of this nature. Putting aside the ordinary sources of fallacy, the poor consumer of such meat is rarely capable of tracing the relation of cause and effect between bad food and its evil consequences. He would conclude meat to be wholesome which failed to produce some striking bad symptoms soon after a meal, and would be unable to refer to its true cause the injurious influence, slowly and silently, but not less certainly, wrought upon the system by the long continued use of an unwholesome article of diet."

Of the microscopic appearance of these entozoa, Mr. Quekett, in his "Lectures on Histology," gives the following descriptions: "The entozoa are divided into four orders, viz.: cystica, cestoidea, trematoda and nematoidea, and the skeleton, if such can be said to exist, certainly belongs to the dermal class. In the cystic order the structure of the tegument or wall of the cyst is minutely granular, but in its higher state of development, as in cysticercus, it consists of fibrous tissue.

"In the genus cænurus the cyst is granular, but in echinococcus the young frequently found within the cyst or body of the parent are each provided with a crown of hooks of peculiar figure; the same kind of hooks, but on a larger scale, are met with in adult individuals of the genus cysticercus and cænurus.

"In the cestoid order, which includes the 'tapeworms,' the body consists of a series of joints, each of which is composed of a fibrous tissue, and incloses a distinct vascular, digestive, and generative apparatus. The head of the tænia solium or common tapeworm is surrounded with a crown of hooks, but, although larger, they are not so numerous as those of the young of the echinococcus.

"In the order trematoda, which may be represented by the fluke, inhabiting the ducts of the liver, the external tegument is principally composed of a soft fibrous structure, sufficiently transparent to allow of some of the viscera being seen within. In the planariæ, which resemble the distoma in external form, the integument is capable of considerable elongation.

"In the last order, nematoidea, in which the articulated character arrives at its highest state of perfection, we have also the well developed dermal skeleton; in some of the large round worms, such as the ascaris lumbricoides, the integument is of a horny nature, and when viewed under the power of 250 diameters is found to consist of a series of rings, or bands of transparent elastic material, exhibiting short fibres, crossing each other at various angles; so elastic is it that when every trace of muscular tissue is removed, there is an evident tendency in it to resume the cylindrical form it originally occupied."

Before closing this first class of the subject I have undertaken to discuss—the influence of parasites in the production of disease—I ought to give a description of the flora within animals, but I feel that I have not as yet studied the subject sufficiently to speak authoritatively upon it. That vegetable parasites—ectophyta—frequently infest cattle and produce disease on man we have many instances, the most frequent of which is the "ring-worm," affecting cattle, which produces eruptions and boils on the hands of persons who clean them, or who dress their skins. These sores and eruptions are caused by the vegetable parasites *trycophyton tonsurans*. But any description of the *ectophyta* is beyond our province, as we must confine ourselves exclusively to the effects produced by diseased meat and milk.

Fasciola Hepatica; Distoma Hepaticum; Liver Fluke, the most common of the liver entozoa of sheep, cattle and other herbiverous animals; the Rot.—The fluke is the most common of all the known existing species of trematoda. The number of existing species is very large. In a most elaborate and lengthened paper in the fifth volume of the "Journal of the Proceedings of the Linnæan Society," entitled a "Synopsis of the Distomidæ," by T. Spencer Cobbold, M.D., he recognizes 344 different species of flukes; of these, 126 are proper to fishes, 108 to birds, 47 to reptiles, 58 to mammalia, and 5 to non-vertebrate animals.

The flukes are small parasites, generally visible to the unaided eye, some not exceeding one-hundredth of an inch in longitudinal diameter, but many of the species from one-quarter to one-half an inch in length. The species we are here considering, the fasciola hepatica, seldom exceeds an inch in length, and the majority found are not more than half that length. There are four known varieties, very much larger, varying from three to five inches in length; but of these we need not speak, as they are not parasites within animals whose flesh we eat.

These flukes enjoy the privilege during a portion of their existence of making for themselves a home in the interior of the bodies of living animals, but they are not parasitic during the whole period of their existence; for while passing through the cycle of their life development, they are found during their earliest period in ponds, brooks, moist places, low pasture grounds, on the leaves of grasses and weeds that are kept moist by water or dew. In a further period of development they attach themselves to the body of a slug, pond snail, tadpole, or some aquatic insect, and bore themselves within to the viscera of their hosts. In this state they frequently migrate from the body of their host and become capable of an independent existence. They are taken into the stomachs of sheep, cattle, etc., either by the animal drinking water, or eating grass or vegetable food, or swallowing the soft body of some aquatic insect containing the parasite. Upon entrance into the digestive organs of cattle, the cercariæ bore their way after a time into the liver, where they become encysted and remain for weeks or months, perfecting their development, until they arrive to the sexually mature fasciola hepatica. When fully arrived at its state of perfection, it bores its way into the ducts of the liver, passes down the ductus communis choledicus into the intestines, and is thence expelled from its vertebrate host. Its eggs are deposited upon the moist ground or upon growing vegetables.

These parasites are sometimes very numerous in the livers of sheep found in this market. I have seen fifteen sexually mature animals within the liver of one sheep. The animal was in a sickly condition and could not have lived long—its whole carcase had a diseased appearance, but it was sold for human food. The parasite is more frequently found in the spring, and when the spring is very wet, fearful mortality frequently occurs amongst sheep from this cause. Dr. Cobbold says, "This little entozoon, more powerful for the destruction of its friends than our huge armaments for the annihilation of our enemies, destroys in England alone some tens and even hundreds of thousands of sheep annually, besides afflicting in a lesser degree the larger cattle—added to which, our own viscera are sometimes deemed worthy of a visit." In some years, in England, over 2,000,000 of sheep have been destroyed by this parasite, and this does not include the numbers that are killed and sent to the meat market to prevent a total loss to the pockets of the owners. As we in all American cities virtually have no system of meat inspection, it is impossible to ascertain the effect that this large amount of diseased meat has upon the public health.

Innumerable diseases are undoubtedly engendered by the use of diseased meats, which might be prevented if the subject that I have opened for discussion were properly understood; but great difficulties stand in the way of acquiring a deep knowledge upon the subject. No assistance of any kind is afforded to those who would elucidate the subject, the whole expense of procuring animals or meats must be borne by the student himself, and there are no societies to afford him any encouragement or assistance; his progress, unless he has abundance of means at his disposal, which, unfortunately, is seldom the case, must necessarily be slow. In Europe the governments foster and furnish the means to prosecute such researches.

I have before spoken of the "Synopsis of Distomæ," by Dr. Cobbold; the conclusions to which he has arrived as to the development and transformations of the common liver entozoon of cattle may thus be summed up:

1. The fasciola hepatica, or sexually mature liver fluke, is especially prevalent in sheep during the spring of the year, at which time it constantly escapes from the alimentary canal of its host and is thus transferred to open pasture grounds.

2. It has been shown by dissections that the liver of a single

sheep may, at a given time, harbor several dozen specimens of the fluke; and it is certain that every mature entozoon will contain many thousands of minute eggs.

3. The escaped flukes do not exhibit powers of locomotion sufficient to prove them capable of undertaking an extended migration, but their movements may subserve the purpose of concealing them within the grass or soft soil where they have fallen.

4. The eggs can only escape from the oviduct of the entozoon one at a time; but there is every reason to believe that large numbers of loose ova are expelled from the infested sheep in the same manner as the flukes themselves.

5. By the dispersing agency of winds, rains, insects, feet of cattle, dogs, rabbits, and other animals, and even by man himself, the eggs are carried in various directions, not a few of them ultimately finding their way into pools, ponds, ditches, canals and running streams.

6. The freed eggs, if mature, contain ciliated embryos capable of active progression, when brought in contact with dew on the blades of grass, rain-drops, pools of water, ponds and lakes. The prolonged action of moisture without, aided by vigorous movements of the perfected embryo within, serves to loosen the lid-like end of the egg-shell by the opening of which the animalcule is set free.

7. The ciliated embryo, or *proscolex*, as Van Benden calls it, contains within itself a solitary germ, which is developed by a process of internal budding into a non-ciliated larva or *scolex*.

8. The ciliated embryo, after swimming about for a time, sooner or later selects and attaches itself to the surface of the body of a pond snail or slug, or the soft body of some aquatic insect. In this situation it soon looses its ciliated covering, and subsequently gains access to the interior of the selected host.

9. Once within the viscera of its host the embryo disappears, leaving the hitherto contained germ-bud or scolex to undergo its further development, which is accomplished rapidly, a second progeny being at the same time formed within its own interior.

10. The enlarged and independent scolex is now transformed into a large sac or cyst, for the support and protection of its contained progeny. In this condition it is frequently called a

"nurse" or "sporo cyst," and when rather highly organized is known by the title of "redia."

11. The nurse progeny, or trematoda larvæ, thus produced within the scolex, are usually furnished with tails, and when fully developed are the well known cercaria. Van Beneden calls them pro-glottides.

12. The cercaria have a tendency to migrate from the bodies of their molluscan or insect hosts, and they are quite capable of an independent existence. During these wanderings in the water, or in moist pastures, they are occasionally brought in contact with the human body, and in some instances appear to have succeeded in penetrating the skin.

13. It is not certain whether the cercaria are taken into the bodies of quadrupeds when the latter are drinking water or eating solid food, but it is probable they are transferred in either way. It is not unlikely that they are often swallowed while still within the bodies of their molluscan or insect hosts.

14. From the digestive organs of sheep or cattle the cercaria bore their way through the tissues into the liver, in which situation they part with their tails, and become encysted. This constitutes the so-called *pupa* stage.

15. The pupa thus encysted for many weeks or even months attains a higher organization, at last becoming converted into the sexually mature fasciola hepatica. It then gains access to the liver ducts, passes into the common biliary outlet, or ductus communis choledicus, from thence is transmitted into the intestinal canal, being finally expelled from its vertebrate host in the manner previously described.

An elaborate treatise on this parasite is "De la Reproductions chez les Trématodes endo-parasites, par J. J. Maulinié. Extrait du tome iii. des Memoires de l'Institut Génévis."

Dr. H. A. Pagenstecher, of Heidelberg, says, on this parasite: "We are again encouraged to take up our hitherto fruitless searchings among land snails, and we hope, with M. Maulinié, that the next steps in this direction will clear up the history of the development of distoma hepaticum."[1]

[To be continued.]

[1] See, also, Die Menschlichen Parasiten und die von ihnen herrührenden Krankheiten. Von Rudolf Leuckart. Leipzig: 1863.

Amblyopia Produced by Osmic Acid. By HENRY D. NOYES, M.D., New York; Surgeon to the New York Eye and Ear Infirmary, etc.

[Read before the American Ophthalmological Society, June, 1866.]

In the *Edinburgh Medical Journal* for February, 1866, is an account of the recent progress of chemistry, by Dr. Stevenson M'Adam, and a statement is made of the poisonous effects of a new substance, mercuric methide, and that among the mischiefs to the nervous system, viz., deafness, idiocy, numbness, it caused loss of sight.

I am induced to relate the following observation of poisonous qualities belonging to another rare chemical agent, viz., osmic acid. This substance is a derivative from the metal osmium, and the latter is found associated with platinum and iridium in minute quantities. It is stated in Brande & Taylor, p. 490, that "when heated in the air osmium burns into an oxide, and exhales poisonous fumes, having a peculiar odor, somewhat like that of chlorine."

In June, 1863, Dr. P., assistant in a chemical laboratory, came into my office, stating that he had been suddenly made blind in the left eye in the following manner. He was heating in a crucible a compound of iridium and osmium. He took out a bit of the metal with a pair of forceps for closer inspection, and though aware of the poisonous properties of the fumes, incautiously held it near the left eye. Immediately struck with a sharp pain, he shut the eye and drew back. In ten minutes he came into my office. The lids were spasmodically closed, light very distressing, and pain in the globe severe. The conjunctiva and sclera were intensely injected, and lachrymation profuse. Pupil of natural size and activity. Sight dim, viz., $\frac{1}{3}$, and reads only No. 3 of Jaeger at ten inches. All objects look dim. This dimness is not the effect of lachrymation, because wiping away the tears does not better the vision. Accommodation perfect. There are no muscæ nor phosphenes; the visual field normal. By the ophthalmoscope, both the inverted and upright image, no material change discovered. The media clear, the optic nerve pink, but not unlike the other eye.

The external inflammatory symptoms continued for one day, and then the eye resumed its normal condition, both in appearance and function.

Dr. P. informed me that a similar accident had once before occurred to him, and that he had seen an account of such an occurrence to a Russian chemist.

The impaired sight was not the effect of the irritation of the conjunctiva, because an equal degree may be excited by the presence of a foreign particle, without any amblyopia. Dr. P. and myself were both convinced that a peculiar poisonous influence was exerted on the retina, produced in a marvelously short time, by the simple contact for only an instant of the irritating fumes of osmic acid with the surface of the globe.

I also present to the Society the following cases of sub-retinal effusion, in two of which the operation of puncturing the retina was performed without benefit, and two of which resulted in nearly complete spontaneous absorption of the effusion. The latter result is, as is well known, extremely rare, while the negative issue of the operation to procure absorption of the fluid is, as we know from the trials of Mr. Bowman and Prof. Græfe, the common experience.

Cases of Sub-Retinal Effusion.—1865, February. Mr. B. F. N., æt. 35, native of Orange County, New York, a policeman, weighs about 230 lbs., of florid face and very muscular. For two months has had flashes of light, bursting balls of fire. Sight had always been good; had no pain in eyes, but some heaviness of the head; bowels regular. A few days ago sight of left eye suddenly injured; cannot read any print; visual field in its upper half is entirely dark, the line of division being nearly horizontal (the lower half is normal). By the ophthalmoscope the retina is seen to be pushed into the vitreous humor by subjacent hemorrhage. The sac occupies the lower and outer portion of the fundus. The vitreous clear, the optic easily seen, and the emergent vessels congested.

Right eye, vision 1; at the edge of the optic disk is a little crescentic atrophy of the choroid, as in posterior staphyloma, but there is no myopia.

I determined to puncture the retina in hope of improving sight. At evening, with the aid of Dr. Agnew, who held the upper lid, I performed the operation. The patient placed under a gas-light, and the eye illuminated by a mirror attached by an elastic band to my forehead, a broad, double edged needle was entered between the superior and external recti muscles, and advanced until its point was distinctly seen in the vitreous humor; it then was plunged into the highest part of the retinal sac, and the point carried backwards to enlarge the perforation. Blood at once flowed into the vitreous. Applied a compress and bandage.

The following day took eight ounces of blood from the median frontal vein, with great relief to the oppression in the head. Ordered a brisk cathartic.

On the second day examined interior of eye, and found the vitreous filled with clots. By a strong light could see the retina floating at a lower level and much wrinkled; it was before quite smooth and tense. After two weeks the moderate reaction which took place passed away. During five months there was a gradual clearing up of the vitreous humor, but never to a degree which gave useful sight. Then, viz., in July, serous irido-choroiditis ensued, with great injection, pain and tension. By paracentesis and moderate antiphlogistics this was overcome.

October. A chronic inflammation remained; the globe softened; the pupil irregular and adherent; iris atrophied; vitreous filled with opaque material; no perception of light; considerable ciliary congestion and neuralgia.

April, 1866. Atrophy of globe decided; eye not painful; lens cataractous.

Case II.—Mr. R. V., farmer, New Jersey, æt. 26, of temperate habits, good health, was under treatment in the summer of 1862 for sub-acute retinitis with serous effusion into the vitreous of left eye. The case continued during ten months under treatment, until the eye became clear and vision good. For a year there was no change. Muscæ then began to appear before the opposite eye, and after continuing for a month a sudden and great loss of vision took place, for which he again consulted me. I found the visual field much encroached upon at its periphery, and central vision reduced to the perception of large objects, as the hand at a short distance. By the ophthalmoscope, the lesion was found to be an effusion of serum which had stripped up the retina throughout its entire circumference. It hung in folds into the vitreous, projecting on all sides toward the axis of the globe. The vitreous turbid; by peeping under the retinal festoons the nerve could be dimly seen, and was deeply congested.

After a fortnight, during which he was cupped and purged and otherwise treated, no improvement took place, although the serum settled to the bottom of the eye and appeared to fill two-thirds of its cavity. The retina floated freely upon it, thrown into numerous folds, had a gray, opaque color, and some spots of a very dense white. Optic then invisible. Visual field existed only below the horizon and within very narrow lateral boundaries. I determined to resort to the puncture of the retina with the view of allowing the serum to mix freely with the vitreous, and hoping that the retina would resume its proper relations, if not immediately, as a result of gradual absorption. I made use of two straight, broad needles, entering the sclera at its equator, one between the internal and inferior recti, the other between the external and inferior recti. I was aided by Dr. Bumstead, of New York, and Dr. Williams, of Brooklyn. The operation was by gas-light, and the interior of the eye illuminated by a mirror attached by an elastic band to my forehead. I could see the point of one needle emerge through the retina, and could feel the other touching it. I lacerated the retina in the same manner that we tear a capsular cataract. On withdrawing the needles, about six drops of a pale fluid escaped, and the globe was soft. Previously its tension was normal. Applied pressure bandage.

The following day the visual field had risen to a higher level; eye slightly injected. On third day, used the ophthalmoscope, and found the vitreous filled with membranous opacities.

About two months afterwards it was found that the effusion remained beneath the retina; at the bottom of the eye it was opaque and appeared to be as great in quantity as before. There was also effusion behind the retina at its upper part. This fluid was very clear and small in quantity, permitting the retina to lie very close to the choroid. With this portion of the retina he could perceive light, but not count fingers. Optic entrance visiblo. After two months longer there was no change, certainly no improvement either in vision or in ophthalmoscopic appearances.

The other eye, namely, the left, which had first been the subject of treatment, continued good, vision being $\frac{20}{30}$, the optic habitually hyperæmic.

One year after, in February, 1866, the patient came to me again. Within the last three months he had had three attacks of sudden dimness of sight. The first two had lasted but a few days; from the last, which took place four weeks before, he was still suffering.

I found the vitreous humor pervaded by clots, and the optic not visible because of the turbidity; the visual field equal in all parts, and no separation of the retina. There had been no pain, and the patient knew of no cause to produce this hemorrhage.

After two months longer a fresh bleeding occurred, and at this time behind the retina, leaving him barely perception of light in the upper and outer part of the visual field.

Notwithstanding derivative treatment, pretty actively employed, and regulated diet and mode of life, no improvement was effected, and the patient remains blind.

After the non-success of the attempt to get absorption of the sub-retinal effusion in the first eye, it was not deemed of any avail to make another effort in the second.

I found it very difficult to explain the cause of the repeated intra-ocular effusions and hemorrhages. The patient was of temperate habits, lived a regular life, being a farmer, had no occasion to overtax his eyes, and possessed robust health. Had no hemorrhagic diathesis; very rarely had epistaxis; very seldom had headache. There was no heart disease, no atheroma of arteries, no irregularity of the pulse. Urine normal. The only clue to a cause is found in the fact that his mother died of apoplexy.

From the more extended and unsatisfactory experience of Bowman and Graefe in the surgical treatment of sub-retinal effusions, we are driven to attempt yet other methods of relief.

It is doubtful whether any form of suction would prove more successful, but it may be worth trying.

The prognosis in this disease is always extremely unfavorable, but I have the satisfaction of adding two instances in which a very decided improvement took place by the almost complete and spontaneous absorption of the fluid.

CASE III.—October 11, 1864. Mr. C. M. J., æt. 40, engraver, health good, myopic $\frac{1}{8}$; has chronic ophthalmia tarsi; has had no trouble of sight except by an accident 16 years ago, when one eye was struck by a piece of wood; its sight was destroyed for a month, and afterwards restored. Four days ago the left eye suddenly became dim; there was no pain nor external inflammation. The visual field is dark below the horizon, and on the outer side the impairment reaches a little above the horizon. By the ophthalmoscope an effusion of a light color is seen to have taken place behind the retina, at the upper and inner part of the fundus, evidently serum.

On the 15th, eight days from the attack, the visual field became much more extensive.

On the 18th, eleven days from the attack, the field of vision was complete; the sharpness of sight was such that with glasses —10 he could count fingers at eight feet. By the ophthalmoscope the vitreous is found to be hazy, but no large masses floating in it. No detachment of the retina can be discovered, nor could I find any evidence of its having been torn or perforated.

On the 20th haziness of the vitreous continues, but permits the optic to be seen. On the portion of the fundus where the effusion occurred ripples or folds of the retina can be discerned, as if it had not yet become smoothly applied. I can also discover, when the eye is turned upwards, a mark like a scar, surrounded by white spots and pigment masses, as if there had been at some former time a laceration of the choroid. I consider it extremely probable that this is the result of the blow inflicted on the eye sixteen years ago, and which caused a temporary loss of sight. He has now metamorphopsia; upon looking at straight parallel lines, some of them have a curve like this }|{ . No lesion can be discovered at the macula lutea.

I met the patient in the street some months afterwards, and he averred that sight had improved until it was almost as good as before the effusion took place.

In another instance of post-retinal effusion I have seen a decided diminution in the quantity of fluid. The place of detachment was on the temporal side of the fundus, and extended over but a small space. The fluid appeared to be serum.

There have been other cases recorded in which absorption of such effusions has occurred. In the *Klinische Monatsblätter*, March, 1866, page 81, are two cases: one spontaneous, recorded by Steffan, the other the effect of an orbital abscess, related by Bertin. In both these instances the effusion was serum.

It is well known that an effusion may descend to the bottom of the eye, stripping up the retina, and permitting the portion originally pushed off to relapse to its place, and somtimes to recover its function; but the cases I have cited were of a different and more auspicious character. The event of absorption is exceedingly rare, but it is a satisfaction to know that in the case of serous exudation it is not impossible.

There are two points to which I would call attention, viz.: how to make the diagnosis of a very small and transparent post-retinal exudation, and the fact that then the functions of the retina may not be entirely suspended.

I have found it a little troublesome to distinguish a slight lifting up of the retina when the subjacent fluid was transparent and the retina not opalescent. Careful scrutiny will decide the diagnosis, by observing that the retina exhibits at this spot a rippled reflection, something like the effect produced by a seamed and irregular pane of window-glass. The light glances from it as it would from the surface of water rippled by a gentle breeze. This is to be seen by the inverted image, and may be pronounced upon with far greater certainty by the binocular than by the monocular ophthalmoscope. This is one of the cases which exhibits in a striking way the great advantages of the binocular instrument. Another point in diagnosis is gained by the use of the upright image, the direct method of examination. If the eye be emmetropic, a portion of the fundus will be found where hyperopia becomes evident. While a weak concave glass, say —1-36, may be needful to get a sharp image of the fundus at the place of detachment this glass will be superfluous, and the transition from attached to separated retina will, at the borders of the exudation, become manifest. If any large retinal vessels traverse the detached portion of the membrane, their tortuosity will at once settle the diagnosis. But my remarks apply to the case where no such aid is afforded. In such cases I have sometimes been able to see the choroidal vessels through the retina and subjacent serum.

To verify the diagnosis beyond question, put a convex glass behind the mirror and try how strong this may be and yet give a clear view of the detached retina. Knowing, then, the refractive condition of the eye, the difference between the usual emmetropia, myopia or hyperopia of the eye and the local hyperopia, diminished myopia or greatly increased hyperopia, will prove that the retina is pushed into the vitreous humor.

Finally, I may briefly allude to the fact which others have noticed, that even when lifted from the choroid, providing the fluid be not great in quantity nor opaque, the retina may retain perception of light and possibly perception of objects. This has a bearing upon prognosis and also upon diagnosis, as derived from examination of the field of vision.

On the Necessity of Employing Greater Accuracy in Ascertaining and Expressing the Degree of Acuteness of Vision. By H. Derby, M.D., Boston.

[Read before the American Ophthalmological Society, June, 1866.]

This is a subject of absorbing importance. It is the text in which ophthalmology records its triumphs. That it should be clear, defined, terse and accurate, none will deny, as upon its possession of these qualities depends the value of our scientific observations.

The older ophthalmologists gave the results of their treatment, operative or medicinal, in a vague and unsatisfactory manner. We are informed that the vision in one case remained imperfect; in another, became so much improved that the patient could read ordinary type, or even fine print. One could see objects about him nearly as well as ever; another received imperfect impressions. This information is very well as far as it goes, giving, as it does, an approximate idea of the benefits resulting from the operation or treatment. But in view of the vast advances recently made in the single department of operative ophthalmic surgery, it will be readily admitted that far greater accuracy of expression is required in order to decide on the relative merits of rival operations, to ascertain exactly how far the degree of vision, retained or acquired, falls short of, or how it compares with, the normal standard. The subject to be discussed during the present session is an instance in point. Of what value would be the statistics of a hundred cases of extraction of cataract where it was simply stated that the patient afterwards read newspaper print or great primer type, no allusion being made to the rapidity or confidence with which this was accomplished, to the distance at which the paper or book was held, or to the perception of distant objects? I have, for example, at present a patient laboring under an amblyopia brought about by the inordinate use of tobacco. With one eye he reads Jaeger No. 6 (brevier); with the other Jaeger No. 4 (nonpareil). This sounds like a fair amount of sight. And yet this very patient, put to the tests now in common use, is discovered to have lost in one eye $\frac{11}{12}$ths, in the other $\frac{13}{14}$ths of his vision. And the principle long received, that a large retinal image aids the eye to overcome numerous circles of dispersion, enables us to account for the size of type made out when held in close proximity.

It is, therefore, no longer sufficient to say that the eye makes out a certain size of ordinary type, and it is for such reasons that the useful system of Jaeger (so great an advance on what had preceded it) has yielded to that which we owe to the genius of Snellen. With his formula we are all familiar. "The utmost distance at which the types are recognized, divided by the distance at which they appear at an angle of five minutes, gives the acuteness of vision." $v = \frac{d}{D}$ certainly deserves to come next in order to the formula of Donders for expressing the range of accommodation, the stepping stone to his labors in that field.

I think, however, that no one can long watch the progress of his own cases and record results on the plan of Snellen, without being sensible of certain deficiencies in its present application. And I am desirous of very briefly calling your attention to a leading source of inaccuracy, viz., *the varying degree of illumination.*

That the amount of vision is dependent on the intensity of light has been recognized by Snellen, and in his edition of 1866 he states that the illumination of the letters should be of constant value during our experiments. The majority of us have doubtless been struck with the varying answers obtained from the same person when examined at different times of day and in different states of the weather. Fractions of different value are obtained in the same case within so brief a space of time as to preclude the possibility of any appreciable change in the vision having taken place. I do not think it necessary to dwell on this fact, entertaining no doubt that the experience of all who use the test of Snellen by ordinary daylight will bear me out in this respect.

On the principle, then, that "the illumination of the letters should be of constant value during our experiments," I would suggest an expedient which must have often occurred to every one present, and which is now brought forward with the conviction that its general adoption is a matter of considerable consequence. *Let the letters used as a test be placed in a room from which daylight is excluded, and let them be illuminated by a steady flame, uniform in intensity of illuminating power, and placed always at the same distance from the letters.*

I have followed out this plan during the past four years with great advantage, and find that its adoption not only insures accuracy in the examination, but gives confidence to the patient. Nothing is more common than to find that patients who have been already examined elsewhere, and who bring with them the results of that examination, endeavor to account for any apparent variation on the plea of the light being different or the time of day not being the same. Those, however, who come month after month and year after year, and whose vision is tested on the same or similar letters, hanging in the same darkened room, and illuminated constantly by the same light, are easily convinced that any change that may have occurred is in the eye and not the surroundings.

Each practitioner can readily decide by experiment what degree of illumination will render the letters of the text visible in the proper distance to the average emmetropic eye. And the general adoption of this principle is strongly urged, with the conviction that in this way alone can we obtain results at once reliable and uniform.

Lectures on the Treatment of Nervous Disorders by the Application of the Constant Galvanic Current. Delivered at the Hospital of La Charité, Paris. By Dr. ROBERT REMAK, Professor Extraordinary of the Medical Faculty, University of Berlin.

(Continued from page 196.)

[These Lectures of the late celebrated Berlin Professor, delivered last summer at the Hospital of La Charité, Paris, just before his lamented death, are translated and prepared, expressly for THE JOURNAL, from the authorized Paris edition, published in the Revue des Cours Publics, Partie Scientifique, from the manuscript furnished by Dr. Remak.]

IV.

To comprehend the anti-paralytic action of the constant current, it will be necessary to examine separately the different varieties of paralysis. If the paralysis is the result of inflammation, or of some irritation, either in the nerve-trunk or nervous centres, the current will produce an effect which I will call *catalytic*, about which I shall have something to say hereafter. At present we shall speak only of those paralytic conditions where it is necessary to invigorate the nervous system without reference to the cause. There are two kinds of paralysis: 1st, paralysis of motion, and, 2d, paralysis of sensation, or anæsthesia. Motor or muscular paralysis may be complete or incomplete; in the latter case there may exist a general debility of all the fibres of the muscles involved, or a total loss of function of certain fasciculi only. Now, the normal action of the affected muscle can only be reëstablished when the nervous centres, and the nerve-trunks whose branches are distributed to it, have either not lost or have regained their natural functions. In such cases only will the local anti-paralytic action of the galvanic current be manifest. You will then see that the constant current, acting through the negative electrode upon the nervous filaments distributed to the affected muscle, will instantly reëstablish the correlation between the muscle and the will, and restore its normal function, producing, at the same time, a bulging or swelling up of the muscular fibres. I have here a case of paralysis of the deltoid, which enables me to demonstrate these effects. The man is thirty-one years of age, a packer by trade, anæmic, but otherwise in good health, who came into the hospital three months ago suffering from rheumatism of the three large joints of the right arm, which were swollen. After having been treated during three weeks by the usual methods, he was suddenly seized, as Dr. Beau informs me, with complete paralysis of the deltoid, and which did not yield to either blisters or induction currents. On examining this patient it is evident that the right shoulder is flattened over the entire deltoid, whilst the elbow and wrist-joints are natural in appearance. There is no swelling to be seen about the shoulder, but there is abnormal sensibility in the synovial membrane of the joint, and in the deltoid, over whose surface the marks of a large blister may be seen. If you ask this patient to raise his right arm, you will see that he cannot move it more than 20 or 30 degrees from the side of his chest, and that this partial movement is effected through the non-paralyzed trapezius. The fact of the trapezius being unaffected is verified by causing the patient to approximate his scapulæ, which he does perfectly well. If you take hold of the arm and raise it, you meet with no resistance; there is only a slight contraction of the pectoralis major muscle, which draws the limb inward, towards the coracoid process. The paralysis of the deltoid is made out. Looking at the differential diagnosis, it may be proper to add that some enlargement of the bone might coëxist with paralysis of the arm, and what is more important to know, is that often on raising the arm you meet with an obstacle apparently caused by the swelling of the humerus or glenoid cavity, but which in reality is only a violent contraction of the great pectoral muscle, which draws the humerus towards the coracoid process, so that the head of the bone rests against the anterior border of the cavity. If, in such a case, the positive electrode of a current of twenty or thirty elements is allowed to act for some minutes upon the infra-clavicular region, you may instantly, either by a single application, or by repeated applications, relax and soften the great pectoral muscle, and thus remove the obstacle, apparently mechanical, which hinders the elevation of the arm. But in the case before us this complication does not exist, and we have only to do with a simple paralysis of the deltoid. Let us inquire into the origin and nature of the paralysis in question. At the outset of inflammation of the scapulo-humeral articulation, you nearly always find a subluxation of the head of the humerus towards the coracoid process, produced by voluntary movements on the part of the patient; and it is this deviation which seems to prolong the duration of the inflammation. If, in such a case, you apply, during some minutes, the positive electrode over the brachial plexus, you succeed in diminishing the exaggerated sensibility of the articulation, and, by the relaxation of the great pectoral, the head of the humerus returns to its natural position. By preventing, then, all motion of the arm by a proper retentive bandage, the inflammation, which ordinarily lasts weeks and even months, quickly subsides, and, obviously, because the derangement of the circulation, caused by compression of the circumflex artery and vein, is removed by our treatment. If the current is not applied, and the compression continues, there is soon developed secondary articular neuritis, ascending or descending, which, in either case, may be the cause of paralysis of the deltoid; either by producing tumefaction and thickening of the circumflex nerve in the axilla, or by tumefaction of the upper portion of the circumflex nerve, at its point of emergence from the brachial plexus. In the patient before us, on examination of the axilla, you discover nothing abnormal; but, on slight pressure with the finger on the brachial plexus in the infra-clavicular fossa, we ascertain a well marked and painful swelling, especially along the inferior cords, where the circumflex nerve has its origin. As to the prognosis in this case, we may safely affirm that without appropriate treatment it may continue for years, or even during life. I have treated and cured by the constant current cases of paralysis of this kind which have lasted for twenty years. In certain conditions—that is, if the hardening of the nerve-sheath is removed by proper means—the induced current exercises sometimes a happy influence, whilst it will increase the evil, and even bring on articular neuralgia, if the hardening is still present.

In these cases there are two methods for the therapeutic application of the constant current. We may begin by exciting the intra-muscular nervous fibrils of the deltoid with the negative pole of the current in motion, causing at the same time swelling of the muscular fibres. But I predict that the result will be unsatisfactory, because the source of the malady is in the nerve-trunk, and must be attacked there. Let us, however, try the first method. I place the negative pole upon the point of emergence of the circumflex nerve, and I place the other pole over the surface of the deltoid. Contractility, which had not been excited by previous trials with the induced current, is not more so by its interrupted constant current, but it is, after a while, by its continuous application. Still the curative effect is almost nothing; there is an increase of a few degrees of the angle the arm can make with the body.

Let us now operate on the nerve-trunks. I place the positive pole of a current furnished by twenty-five elements upon the painful spot over the brachial plexus, and the negative pole upon the scapula of the opposite side, to make sure that it does not act immediately on the deltoid muscle. Let us allow the current to act till it reaches its maximum of constancy, which we ascertain by the immobility of the galvanoscope. Now, after an action of two or three minutes, we remove the electrodes, and, as you see, the patient is able to raise his arm perfectly—that is to say, to bring it to a vertical position, the hand in the air. But this movement is performed with some difficulty, and some of the fasciculi of the deltoid, you notice, contract irregularly. The patient complains of crackling in the articulation, and it can be heard.

We must return to the local treatment of the deltoid. On applying the current primitively, contraction is more energetic, and the swelling up of the fibres much more marked, and there is considerable redness of the skin, particularly at the positive pole. The patient now raises his arm without any difficulty, and moves it in all directions, as a gymnast or an athlete; and on touching the tender spot over the brachial plexus, it is less sensitive and less hard.

To finish the explanation of these phenomena, which naturally excite our astonishment, it should be stated that the current, in acting upon the brachial plexus, must go very near to those filaments of the great sympathetic which are distributed to the blood vessels of the arm, and which our distinguished friend, M. Cl. Bernard, who to-day honors us with his presence, has shown control the muscular fibres of their walls. Hence the action of the current in the case before us has not been limited to the stimulation of the motor nerve fibrils—a feeble stimulation, since we used only the positive pole—but it determined more or less dilatation of the blood-vessels, with increased flow of blood to the paralyzed parts; this increased flow of blood played a large part in the phenomena we have witnessed.

To obtain a complete cure in this case, it will be necessary to apply several times the current, with the view to a perfect reëstablishment of the normal state of such fibres as may have escaped this time its action. As I predicted, the removal of the paralysis of the deltoid, which was accomplished some days since, has been permanent; but we have applied twice since the constant current over the brachial plexus, and particularly upon those contracted fibres of the great pectoral muscle which hindered free movement of the arm, and prevented the patient from resuming his usual occupations.

This example may serve as a type of that species of paralysis which I style *neuritic*, because it depends solely on tumefaction of the nerve-sheaths, and is frequently complicated with neuralgia and anæsthesia, if the sensory filaments of the nerve-trunks are compressed. We can thus readily understand that the same morbid cause may, according to circumstances, produce paralysis or contraction, anæsthesia or hyperæsthesia. I recognize two varieties of neuritic paralysis: 1, primary; and 2, secondary. The second variety is that which is connected with inflammation, either of the articulations, after fracture of the bones, or with the viscera, as the uterus, ovaries, intestines, and even the lungs. It will occupy too much time to dwell on the different neuroses of this kind. Primary neuritic paralysis is caused by cold, or by a forced stretching of the nerve-trunks. It is met with in the muscles of the shoulder, as the serratus, the rhomboideus, the deltoid, etc. In these cases there is not only swelling of the brachial plexus, but also of the nervous branches which are distributed to the paralyzed muscles. Under such circumstances it is useless to attempt to reëstablish the motility of the paralyzed muscles by the direct local application either of the induced current or the constant current; but if you allow the constant current to act upon the swollen nerves, you will notice, even in the most inveterate cases, the lost contractility of the muscles redeveloped, and voluntary motion return.

The photographs which I exhibit to you will give you an idea of the results of this method of treatment. This one, represents two men who had suffered from total and long-standing paralysis of the dentatus and trapezius, who were completely cured at the end of three months of treatment. This is one of a naval officer who, after shipwreck, was seized with total paralysis of the deltoid, trapezius, and sterno-mastoid muscles. Four months' application of the induced current did no good; indeed, during that time a severe neuralgic complication appeared. I treated him with the constant current for four months, and cured him—and this, four years after the disease first appeared. I am perfectly satisfied, after a long experience, and having fully tested the question to my own satisfaction and that of my friends, that the induced current weakens the power of the paretic muscles, and that the constant current, applied immediately afterwards, instantly reëstablishes it.

Neuritic paralysis, both primary and secondary, occurs in the lower extremities, especially in the regions of the crural and sciatic nerves; but I shall not do more now than state the fact, and will pass to another variety of peripheric paralysis, in which the treatment by galvanism is of special interest, on account of the great sympathetic acting intermediately to the current.

V.

I show you here a case of facial hemiplegia, in a woman twenty years of age, as an example of this form of paralysis. Since her youth, she has suffered from suppurative otitis of the left ear. It was evidently a predisposing cause of the hemiplegia with which she was suddenly attacked three months ago. Admitted into the wards of Dr. Beau, she was there treated by the usual remedies, including the induced current, which latter failed to produce even contraction of the paralyzed muscles. All the muscles of the left side of the face are affected; she can neither close the eye nor move the eyebrow; the mouth and end of the nose are drawn towards the right side, especially when the patient talks, or attempts a grimace. In blowing from the mouth, the air passes through a large opening on the left side. The muscles of the cheek are hard, and the sterno-cleido-mastoid is a little shortened, so that the chin is somewhat drawn towards the right side. Below the exterior border of this muscle are swollen and indurated cords, including the nerves, lymphatics, and glands. The bones of the face, especially the zygomatic arch, are swollen and painful to the touch.

When we apply the constant current upon the paralyzed muscles, you will see that they will not contract, even with a powerful current—one which produces a good deal of redness of the skin. Nor is there any more contraction if the current acts directly on the nerve-trunk.

But experience has taught me that if the current is allowed to act for some minutes upon the great sympathetic in the neck, we will, on examining the muscles of the face, find that several of these muscles, and sometimes all of them, recover their contractility. I will make the experiment before you. I apply a descending current of fifteen elements acting along the cervical portion of the great sympathetic for three minutes; on looking at the face you see the zygomatic muscle and the lower portion of the orbicularis contract under the influence of the same current, which a few minutes before, differently applied, produced no effect. You at the same time perceive that it is not stimulation of the nerve-trunk which causes this contraction, and, consequently, that the muscles are nearly in the same state as the muscles of a frog poisoned by curare, which, according to the discovery of our friend M. Claude Bernard, are capable of being excited solely by electric action, and not by nervous action. I am happy that M. Bernard is present to witness this phenomenon. You understand, also, that the reëstablishment of the contractility of muscles is not the reëstablishment of voluntary motility. So long as the nerve-trunk is not capable of being excited, that is, so long as it is not subjected to innervation, voluntary motility does not exist. How, then, shall we regenerate this excitability? I have discovered, in this respect, that by causing the constant current to act on the track of the vertebral portion of the great sympathetic, we are able, after repeated applications of the current, to reëstablish the excitability of the nerve-trunk, and by that means to cause the paralyzed muscles to be again subject to the power of the will.

There are two theories by which these complex phenomena may be explained. The first, and apparently the simplest and most probable, is that which supposes that the application of the current upon the cervical portion of the great sympathetic produces a modification of the sanguine circulation in the muscles of the face, for we know, from the experiments of Brown-Séquard and Stannius, an afflux of arterial blood to muscles, though partially gangrenous, will restore to them their contractility. In looking at it from this point of view, we can explain the action of the galvanic current upon the vertebral portion of the great sympathetic. This action modifies the circulation about the nerve-trunk in the hiatus Fallopii—where in this case we must seek the cause of the disease—and even in the posterior fossa of the cranium, if not in the pons varolii itself.

The gradual disappearance of the tumefaction of the bones of the face under this treatment, may be mentioned in support of this interpretation. On the other hand, I will remark that, after a series of observations which will be mentioned when we come to speak of the progressive muscular atrophy of Aran, I am disposed to believe there exists between the nervous fibrils of the great sympathetic and the cerebro-spinal cells, direct communications, which have not yet been demonstrated either by the microscope or physiological experiments, and that, probably, it is the effect of these communications which is manifested in these cases in so astonishing a way.[1]

The case I have shown to you, and given you the history of, may serve as an example not only for facial hemiplegia, but also for many other paralytic and spasmodic affections, which own for their cause some trouble in the circulation of the base of the brain. I refer such of you as may desire to pursue the subject, to my essay "On the Treatment of Certain Neuroses having their Seat at the Base of the Brain," read before the Imperial Academy of Sciences, of France, September 12, 1864.

(To be continued.)

On the Application of a Compressing Membrane to the Stethoscope. By CHAS. L. HOGEBOOM, M. D.

Auscultation is easier through dense tissues, as bone and cartilage, than through adipose and muscular tissues. In using the stethoscope a certain degree of pressure is requisite in order to have the sounds well conveyed. The greatest condensation lies under the circular edge of the instrument and adjacent to it, both exteriorly and interiorly. By making compression over the entire disk we obtain a greater quantity of sound from those parts lying immediately beneath its centre. This can be effected by stretching across the pectoral extremity of the stethoscope a membranous substance containing sufficient firmness and elasticity combined to compress the tissues and transmit sonorous vibrations. A piece of beef's or pig's bladder answers the purpose admirably. When a stethoscope thus armed is pretty firmly applied to the walls of the thorax condensation of tissue is effected under the whole disk, but not to so great a degree directly under the circular edge as when no compress is used. The surface is not rendered so spherical,

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[1] The result predicted in the lecture was realized after a treatment of fifteen days. The contractility of the muscles of the face, and, up to a certain point, the excitability of the nerve-trunk returned; increased lachrymation stopped; and the tumefaction of the bones diminished. At this point the hemiplegia soon ceases.

but approaches more nearly a plane, while the more equal distribution of pressure is better calculated to increase the resonance of the thoracic walls directly over the organs under examination. The elastic and vibratory properties of the surface of the body are in no way impaired, but rather increased, as well as the conducting power of the tissues. I think it will be found that scarcely any change in the quality of the sounds heard by the ear alone is produced by the use of the membrane. The change is not so great as when the stethoscope is used without it.

In auscultation of the larynx and trachea, especially in thin persons, a great advantage is gained over the ordinary stethoscope, because only a portion of the disk need be applied to the surface, the mouth of the instrument being already closed. It is generally preferable to have the whole circular rim applied, but this condition is not imperative, nor always desirable. By having the rim rest as lightly as possible upon the skin while the membrane is more firmly applied, we may often advantageously exclude more distant sounds that we do not wish to hear, while we only obtain those which come from directly beneath the space of contact. The membrane may be applied to any stethoscope, and I think it will be found to reduce the *roaring* in all, but to a greater degree in Dr. Cammann's than in any other, thus relieving this excellent instrument of much of the objection urged by some against it. It may be adjusted by placing a piece of bladder for a few minutes in water of ordinary temperature, slightly rubbing and stretching it, partially drying its surface with a cloth, and then firmly stretching it across the mouth of the stethoscope. Generally the bladder requires no other material than what it possesses to make it adhere, although a little mucilage or glue may be advantageously used. If the membrane, after drying, loses its tension, this may be restored by moistening it with a solution of tannin, in the proportion of about ten grains to an ounce of water. Upon drying, the disk will be found to have become sufficiently tense, provided it was at first pretty well adjusted. The compressor might perhaps be constructed of a disk of horn or hard rubber, or similar substance, made very thin and elastic.

In some instruments the use of the compressing membrane will be found to considerably diminish the noise, but not the proper sounds of the internal organs. I think that the valvular sounds of the heart, particularly, will be more easily appreciated and assigned to their appropriate sources. But in the majority of stethoscopes, and especially in those of simple construction, the sounds will be found to be greater when the compressor is used, and more nearly approaching in quantity and quality those which are heard by the ear alone.

Perhaps the majority of auscultators prefer in most cases to apply the ear directly to the walls of the body, availing themselves, however, of the stethoscope as an occasional aid. In selecting an instrument for this purpose, one great desideratum is to obtain one that does not change the character of the sounds heard by the ear alone. This any instrument must do, if it conveys sounds having sources external to the body; or if it be so constructed that the motion of air within it produces sounds which may be said to belong to itself. The blending of *musical chords*, it is well known, increases the volume of sound. Therefore, in using the stethoscope, any tone proceeding from sources which are external to the organs under examination, if it be a chord to tones produced by these organs, must, as a matter of course, increase these tones. If they belong to sounds for which we are particularly seeking, an advantage may perhaps be gained by the intensification, provided the sounds are not otherwise sufficiently audible. Thus, the sound in cavernous respiration may be intensified, if the stethoscope derives from any other source a sound of a similar nature, and whose tone is a chord with that belonging to the cavernous sound. If, however, we are listening to sounds arising in the finer bronchial tubes or air vesicles, they may become obscured by using a stethoscope which is capable of emphasizing the larger bronchial respiration. Such an instrument should be used with great caution, except by experienced auscultators, who are not likely to be led into error by alterations in the organic sounds produced by the instrument itself; and the diagnosis should be verified by other means, where they are available.

An instrument having so practical an application as the stethoscope should not, however, be tested by any theory.

No matter what may be its form or material, that instrument which enables the physician to make the most correct diagnosis is the best. Let theory render what verdict it may, its actual use furnishes the fairest test which can be applied, and that alone must be appealed to in determining its merits.

406 West 22d Street, June 14, 1866.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A Practical Treatise on Urinary and Renal Diseases, including Urinary Deposits. Illustrated by numerous Cases and Engravings. By WILLIAM ROBERTS, M D., Fellow of the Royal College of Physicians, London; Physician to the Manchester Royal Infirmary; Lecturer on Medicine in the Manchester School of Medicine. Philadelphia: Henry C. Lea. 1866, pp. 516.

We have examined this volume with great care and have been well rewarded for our labor. It seems to us that the author has chosen an excellent plan for his book, and that he has amply fulfilled the intentions expressed in the preface. Thus, his opening sentence is—"The design of the present work is to give an account of the organic diseases of the kidney, and of those diseases and disorders of which the chief characteristic is some alteration of the urine."

"The physical and chemical properties of the urine," practically considered, constitute the *first* of the "three parts" into which the treatise is divided. The examination of the urine, the methods of effecting it, satisfactorily, and the significance of the changes in its constitution which are discovered, are the main points for observation.

Secondly, the author has grouped into a class certain affections, hitherto rather dissociated, so far as we are aware. If in any part of his plan we are inclined to disagree with him, it would, perhaps, be here. He classes together, as "urinary diseases," "diabetes insipidus," "diabetes mellitus," "gravel and calculus." The forms of *diabetes*, it is true, are characterized by an alteration in the urine, volumetrically and chemically; but, as is well known, the changes in the kidneys are not referable to them as the initiatory seat of disease; and the junction of the other affections mentioned may seem a little incongruous in this view of the case. We shall again allude to the diabetic group.

The *third* part of the work is the largest, and certainly the most important, practically speaking. This portion is given to the careful consideration of such affections as Bright's disease, hydronephrosis, cancer, tubercle and parasites of the kidney, together with the malpositions and malformations of the organs. The author acknowledges his indebtedness to the works of Prout, Bright, Christison, Frerichs, Johnson, and Basham, "and to the more comprehensive treatises of Rayer, Rosenstein and Julius Vogel."

After indicating the apparatus and methods suitable for testing the urine, and which are certainly very complete and satisfactory, the "extraneous matters" in the urine and "the changes on keeping" are suitably alluded to, and then we enter upon Chapter II., containing a disquisition upon the "Physical Properties of the Urine." The odor, the color, the specific gravity or density, are severally considered. Then the quantity of the urine is examined, and, next, its reaction.

In Chapter III. the examination of the "Chemical Constituents of the Urine and their Variations—Inorganic Deposits," is taken up, and here we find much valuable and well enunciated information. It is with peculiar satisfaction that we dwell upon the portions of this part of the work devoted to the *clinical significance* of the various deposits observed in the urine. Herein we find the real value of the author's labors. To students, particularly, but also to practitioners, the work is, on the above ground, alone, of very great value. To instance a few of the cases in which this is noticeable: First, as to the occurrence of the crystalline urates—urate of soda and urate of ammonia. Of the former, the author remarks: "Under the microscope, it exhibits irregular, opaque, globular and lumpy masses, from which project spiny crystals, sometimes straight, sometimes variously curved." . . . "*Clinically*, this deposit derives its chief importance from the circumstance that it is precipitated within the urinary passages. The spiny crystals irritate the mucous membrane of the bladder or urethra, and the latter canal may even be blocked up by impaction of masses of the deposit. It may also form a nucleus around which calculous matter may hereafter aggregate. The great comparative frequency of vesical calculi in children is not improbably owing to the occurrence of this deposit in the numerous febrile attacks to which children are subject" (p. 59).

In reference to what is termed *oxaluria*, the author does not, in his remarks upon the *treatment* of the condition, consider that it furnishes any special indications as to management. General treatment, after all, seems to be called for. Attention to the supplying of good air and diet, together with regular and appropriate exercise, and, especially, horse-exercise—if available—is the main recommendation. Mineral acids, or alkalies, are to be administered according to the indications supplied by the manifestations on the part of the stomach. "The rule of choice is, to administer the acid when the dyspeptic symptoms point to an atonic state of the organ and of the body generally; and the alkali when the signs point to gastric and general irritation" (p. 67).

With regard to the appearance of *cystine* in the urine, it is remarked that "one of the most curious circumstances in the history of cystine is the unquestionable tendency to run in families" (p. 71). And also, it is asserted that the "*clinical significance* of cystine" is, "chiefly, if not wholly, the danger of the formation of stone and gravel" (p. 72).

Leucine and Tyrosine.—Attention is particularly called to the presence of these substances in the urine, in cases of "acute yellow atrophy of the liver." They have been remarked, also, in typhoid fever. (Städeler, Frerichs.) Frerichs, says Dr. Roberts, "regards the occurrence of these deposits as of great importance in the diagnosis of acute yellow atrophy of the liver" (p. 75).

The author thinks that the deposition of "the earthy phosphates in the urine," or "the tendency" thereto, "dignified," by Dr. Prout, "with the name of phosphatic diathesis," is, on the showing of Dr. Bence Jones, inappropriately so designated, and that the said diathesis "is simply ammoniacal urine."

Passing over what is said concerning several other deposits in the urine, we note the author's remarks in reference to chlorine and the chlorides, and particularly in connection with what has been insisted upon, with more or less positiveness, respecting the presence of the latter in the urine in acute pneumonia. Their diminution in the intenser stages of the disease and their reappearance in the stage of resolution, have been supposed to furnish valuable indications as to prognosis and treatment. Dr. Roberts—referring to Dr. Parkes for corroborative testimony—thus writes upon this interesting point: "Although it be a rule of very prevalent application that the chlorides in the increment [incremental?] stage of acute pneumonia are almost completely retained within the body, and that their reappearance in the urine is coincident with commencing resolution yet there are exceptions to both these statements, especially to the coincidence of the reappearance of the chlorides with commencing defervescence"

(p. 85). Any approach to a "rule" in these cases would certainly be a valuable adjunct to our information, especially as regards treatment, and the subject deserves continued and careful attention from those who have large experience in hospitals, in order that proof may be satisfactorily accumulated.

The estimation of the amount of *urea*, in many cases, is a matter of great importance, and which continually impresses itself upon the mind of the practitioner who has under observation severe cases of renal disease. It happens to us, at this moment, to have one case, out of several of Bright's disease, under our care in hospital, presenting, amongst other phenomena, convulsions at somewhat distant intervals. The question is, of course, as to their nature, whether or not they are uræmic. There are not the more usual manifestations of an uræmic condition, thus infusing an element of doubt into the diagnosis. We therefore shall proceed to test for urea, quantitatively, with the hope of determining the point. This mode of test the author regards to be sufficient for clinical purposes, reserving the processes of Liebig and Davy for "original researches." The valuable table prepared by Professor Houghton is introduced in this part of the volume, and the analytic process is detailed in full. The processes of the two authorities previously named are also given.

In Chapter IV. we have a very full account—accompanied by microscopical illustrations of great excellence (a feature of the work, by the way, which we cannot too highly commend throughout)—of "Abnormal Substances in the Urine: Organic Deposits." This is a part of the volume both highly interesting and exceedingly instructive. We shall advert especially to a portion of this thoroughly examined tract as being of constant clinical observation, and not surpassed by any other, as we think, in importance, particularly at the present day, when the great prevalence of that formidable malady, *Bright's disease*, is so noticeable. When we say great prevalence, we are not unmindful of the fact that the widely extended observation of our times, and the persevering and minute analysis applied to these forms of disease, have enabled practitioners everywhere more uniformly and accurately to diagnosticate the peculiar affection originally made known to us by Dr. Bright. Whilst this truth unquestionably increases the number of recognized and indisputable cases, may we not also assert, without risk of contradiction, that this disease has had large additions to its list of cases by the admitted more intemperate use of spirituous liquors, amongst *all* classes, we may say, but showing more frequently the baleful effects of a constant guzzling of bad liquors in laboring men, who, in addition to this habit, are also greatly exposed to the other prominent etiological influences belonging to the affection, such as hard work in damp situations, privations, insufficient clothing, scanty and poor food, etc.?

The portion of the author's observations to which we have above referred as in our view of great interest and value, both to the learner and to the practitioner, is that devoted to the clinical significance of albumen in the urine, and to the remarks upon acute and chronic Bright's disease.

It is well known that albumen, in small quantities, is temporarily observed in many affections besides Bright's disease. Indeed, as our author mentions, it is exceptionally noted in very slight disorders. For practical purposes, we regard the mode of considering albuminuria adopted by Dr. Roberts as eminently clear and satisfactory; in fact, all that the busy practitioner can well bear in mind, and all that it is really necessary to remember, in the exigencies of the ordinarily observed cases. We gladly extract a few sentences in this connection. "When albumen is found in urine, the important point to determine is whether it indicates the existence of organic disease of the kidneys or not. This question, in any individual case, must be considered chiefly in connection with the three following points jointly, namely:

"1. The temporary or persistent duration of the albuminuria.

"2. The quantity of the albumen, and the occurrence and character of a deposit of renal derivatives.

"3. The presence or absence of any disease outside the kidneys which will account for the albuminuria."

The author then gives some of the excellent remarks by Dr. Parkes, of London, upon "the importance of distinguishing between temporary and permanent albuminuria." Three tabular statements from cases occurring in adults, in University College Hospital, are appended. "By the term 'temporary albuminuria,' Dr. Parkes implied cases in which albuminuria, after lasting some days or even weeks, disappeared entirely for some time before the patient left the hospital; and by 'permanent albuminuria,' cases in which the albumen did not disappear during the time the patient was under observation—this time being generally very long, and always many days. The cases were of the miscellaneous character usually admitted into a London hospital." Cases of vaginitis, cystitis, cholera and pregnancy were excluded. Without citing the figures, we will quote still further from the same section: "The greater the quantity of albumen, the more likely is the existence of renal disease; and a 'large' quantity of albumen (one half and upwards) is rarely found except in undoubted acute or chronic Bright's disease." The necessity is insisted upon of not only estimating the amount of albumen in a particular specimen, but also of regarding, relatively, the total amount passed in the twenty-four hours. The density of the urine is here an indication—"low density indicating that the quantity of urine passed in twenty-four hours is large, and high density the contrary; but judged more accurately by ascertaining what is the actual flow of urine in twenty-four hours. . . . Of all urines there are none more surely indicative of Bright's disease than a pale, abundant urine, which is, at the same time, more or less albuminous. On the other hand, as a rule, with very few exceptions, when the urine is only slightly albuminous, and at the same time dense and high colored, Bright's disease is not present, and the albuminuria is owing either to pyrexia or to some impediment to the circulation of the blood" (pp. 135–6). After mentioning the kinds of deposit most indicative of organic renal disease, viz., very abundant deposits, containing casts and much renal epithelium, and, secondly, such as contain numerous casts and cells in a state of fatty degeneration, our author states that blood casts and very transparent casts, few in number, are the least indicative of serious primary renal disease. The concluding paragraph of this important section runs thus: "When the urine is found albuminous, and there exists neither pyrexia nor thoracic disease or other recognizable condition which can account for the albumen, the inference is almost irresistible that there exists a primary organic disease of the kidney" (p. 136).

To fulfill our promise of further allusion to the subject of diabetes, the affection is considered with much care and fullness, especially in regard to *diabetes mellitus*. Cases illustrative of the phenomena in the latter disease, as well as in *diabetes insipidus*, are interspersed throughout the descriptive text. Just before opening this part of the work, a chapter on "Sugar in the Urine," its qualitative and quantitative testing, and its clinical significance, is appropriately introduced. The pages devoted to these topics are filled with highly interesting matter, and are truly creditable to the author, on the grounds of both research and arrangement.

Chapter III., Part II., is taken up with the consideration of Gravel and Calculus. The length which this article has already attained warns us to touch upon the remaining topic to which we proposed giving some especial attention, viz., *Bright's disease*—as comprehensively as possible. *En passant*, we cannot but say that Chapter III. is very carefully prepared and will well repay perusal.

Bright's disease is examined in Chapter II., Part III., and the *bibliography* which stands at its threshold indicates at once the industry of the author and insures the reader the most reliable information. Without entering upon the discussion of the various opinions extant about the disease, or enlarging upon the several classifications thereof, Dr. Roberts very sensibly takes up the subject in the manner we have previously alluded to as in our estimation possessing so much advantage for learners and practitioners—that is, he treats it "from a clinical rather than an anatomical point of view," and classifies the cases "under the main heads of *acute* and *chronic* Bright's disease." The first group comprises such cases as were formerly called "inflammatory dropsy," the same as Dr. George Johnson's acute desquamative nephritis, Frerichs' first stage, and the acute tubular disease of Dickinson. The second group "includes the protracted cases which have either lapsed into a chronic state from the acute form, or, which is far more frequent, have been chronic from the beginning" (p. 298). Three types of the chronic disease are indicated, viz.: "1. Cases which have lapsed from the acute state (kidney smooth, white, generally large, exceptionally dwindled). 2. Cases which have been chronic from the beginning (kidney granular, red, contracting). 3. Cases associated with waxy or lardaceous (so-called amyloid) degeneration of the kidneys" (pp. 298–9). The deposition of *fat* in the renal substance and in the tubular epithelium not being special to any one type of renal degeneration, but being "associated with anatomical changes of the most varied kinds," is not thought by our author to have a "claim to a separate consideration."

In his remarks upon the etiology of the disease, we find Dr. Roberts confirming our previously expressed suggestion in regard to the abuse of spirituous liquors (p. 302). Passing over the description of phenomena, etc., in the acute form, we come to the *prognostic* elements. It is encouraging to find that the majority of the acute cases "undoubtedly recover." Frerichs places the rate of recoveries at two-thirds of those attacked. (Roberts, p. 312.) We believe that the experience of most practitioners will justify us in saying—in a somewhat wholesale way, perhaps—acute Bright's disease is most frequently recovered from, chronic Bright's disease almost never, if ever. Apparent cessation of the latter may and often does occur, but the slightest cause is sufficient to light up the trouble again, and in a short time mischief beyond repair is effected. In accordance with this opinion we have lately found that of several hospital physicians who have for years had the two forms of the malady almost constantly under observation. It happens to us, at the present time, to be in charge of cases, in the wards of a large hospital, entirely corroborating the positions assumed above in regard to prognosis. Well may Dr. Roberts say: "The prospects of a patient suffering from confirmed chronic Bright's disease are exceedingly gloomy. The textural changes in the kidney are of a kind that do not admit of reparation" (p. 364). And, a little further on, speaking of the seeming cessation—which is only a sort of interregnum, or, rather, a truce of the disease—he forcibly writes thus of persons who have had respites from actual, marked and evident disease for five, ten, or even twenty years: "The tenure of life under these circumstances is exceedingly precarious, and an imprudent indulgence or exposure may bring life in a few hours or days to the verge of destruction; the patient walks, as it were, on a slumbering volcano, which may at any moment waken its fires with a fatal explosion" (p. 365).

The directions for the treatment of the various phases of Bright's disease are full and minute; and the whole volume presents a valuable *répertoire* of facts the most suited to guide the practitioner in his duties in the management of the important affections of which it treats. There is no slurring over of difficulties, and no dubious vaticination in the work; but, up to the close, the consideration of the various topics seems rather to increase in interest. We have not enumerated all the subjects treated of, nor is this necessary; for we are persuaded that enough has been said to induce the profession widely to examine a treatise which will so well repay a careful study.

Towards the last of the volume we find much that is interesting in regard to Pyelitis and Pyonephrosis, Hydronephrosis, Cystic Degeneration of the Kidneys, Cancer and Tubercle of the Kidney, Hydatids, Malposition of the Kidneys and Movable Kidney, together with Anomalies of Form and Number. Illustrative cases abound in these as in the other portions of the work.

A very complete table of contents and a fair index are given—two essentials not so uniformly and carefully attended to by authors as they should be. We have seen better paper than that on which the text is printed, and indeed think the work deserves a somewhat better "getting up" in its American dress—which latter we, of course, conclude it came by legitimately—knowing the reputation of the publishing house which issues it. The illustrations are certainly very well executed, and are, as we have already remarked, a most essential feature throughout. The proof-reading, also, has been very carefully done—only a few typographical errors having met our eye. We bespeak for the work the extensive sale it so well deserves.

Shakspeare's Delineations of Insanity, Imbecility, and Suicide. By A. O. Kellogg, M.D., Assistant Physician State Lunatic Asylum, Utica, N. Y. New York: Hurd & Houghton. 16mo, pp. 204.

This little volume is made up of a series of essays, originally published in the *American Journal of Insanity*, modified, the author tells us, respecting some of Shakspeare's insane characters, as a better acquaintance with the various shades of mental disease, obtained in the wards of a large hospital for the insane, enabled him the better to appreciate the fidelity of the dramatist's delineations.

The first part, which comprises rather more than one-half of the volume, is devoted to Shakspeare's insane characters, Macbeth, Lear, Hamlet, Ophelia and Jaques, and very naturally opens with a reference to the wonderfully minute and accurate acquaintance of the "myriad-minded" bard with physiological and psychological science. Dr. Kellogg maintains that in physiology Shakspeare anticipated the scientific discoveries and deductions of nearly two centuries, and that as regards insanity and psychology we have at this day little or nothing to add to what he appears to have known of these intricate subjects, and asserts boldly that a system of physiology and psychology, in complete accordance in almost every essential particular with that which we now possess as the result of the scientific researches and experience of the last two centuries, could be educed from his writings. While we are not prepared to accept so sweeping a conclusion, in which our author's zeal for his favorite study has, we think, carried him beyond the bounds of propriety, we admire the frankness of his opinions, and admit his ingenuity in sustaining them. In support of his position he cites the very questionable (we think) probability of Shakspeare's acquaintance with the great physiological fact of the circulation of the blood, before it was announced by Harvey; his views upon the influence of alcoholic liquors on mind and body, which are in accordance with the teachings of modern science; his knowledge of the vitality of the blood, and the absorption into the system of medicinal substances, which was far more rational and scientific than the absurd doctrines and dogmas of the Solidists and Humoralists, the rival sects of his time; and his more humane and enlightened comprehension of insanity, which he believed was a disease of the brain, while his most learned cotemporaries regarded it as an infliction of the devil. We fully coincide, however, with Dr. Kellogg's estimate of Shakspeare's realization of the proper treatment for the insane, which is thus summed up in the words of the late Dr. Brigham: "To produce sleep, to quiet the mind by medical and moral treatment, to avoid all unkindness, and, when the patients begin to convalesce, to guard, as he directs, against every thing likely to disturb their minds and cause a relapse, is now considered the best and nearly the only essential treatment."

In the consideration of Hamlet's insanity Dr. Kellogg, aware of the directly contradictory opinions which have obtained among the most eminent Shakspearian critics, maintains, in common with the best modern psychologists, that this was a case of real insanity, and sustains his position ably and conclusively.

An exception might fairly be taken to including Jaques ("As You Like It") among the delineations of insanity, but our author qualifies the inference that legitimately follows from this juxtaposition, by stating that "in the character of Jaques it is very evident Shakspeare intended to represent a certain delicate shade of melancholia," rather than "a fixed condition of disease."

The essay on the character of Cordelia is somewhat irrelevant to the purpose of the book, but is introduced merely to illustrate "the true spirit which should guide, govern, and direct all who are thrown in contact with the insane, in whatever capacity."

Part second, on the delineations of imbecility, opens up with another notice of the universality of Shakspeare's genius, and intimates that it would not be difficult to prove, from his marvelously accurate acquaintance with medical matters, that Shakspeare must have once been a physician to the insane—a conclusion as reasonable, perhaps, as the claims made by the legal profession to enroll the great dramatist in their fraternity.

We have space only to refer to the characters here presented, and to remark that this portion of the book is by far the most sprightly and entertaining, especially to the non-professional reader, and might advantageously be extended to a consideration of a number who are merely alluded to. In the motley procession paraded for our pleasure we find portrayed with fidelity Bottom, Quince, Shallow, Malvolio, Bardolph, Nym and Pistol; and, most charming of all, Launce, with his interesting dog Crab, the veritable prototype of the "yaller dog" so graphically pictured by the Autocrat in his "Elsie Venner."

The closing essay on suicide is an analysis of the character of Othello, and traces carefully the steps by which that "intellectual villain and moral bankrupt," Iago, gradually encompasses his victim, until, in the full possession of his faculties, in desperation, he commits the double crime of murder and self-destruction. Dr. Kellogg shows that Shakspeare here inculcated the important psychological lesson that insanity cannot be developed by any combination of moral causes, unless there exists the peculiar organization, physical, mental or moral, that constitutes the inherent germ or predisposition to this disease.

In conclusion, we commend this little book to our readers, feeling assured that in spite of its faults, some of which we have noticed, it will repay a careful and studious perusal; while the pleasure thereby derived is enhanced very materially by the satisfaction of thumbing so excellent a specimen of mechanical and typographical execution, as the dress in which the publishers have wisely chosen to present the work to the public.

Lectures on Mental Diseases. By W. H. O. SANKEY, M.D., etc. London: 1866. 8vo, pp. 281.

Dr. Sankey, who is the proprietor of the Sandywell Park Private Asylum for the Insane, delivered these lectures, in 1865, to the students of the University College. They are thirteen in number, and though constituting by no means a complete treatise on insanity, are yet very valuable contributions to psychological medicine. Most of the important questions connected with the causes, the pathology and the treatment of mental diseases, are considered in a lucid and highly practical manner. Dr. Sankey is an advocate for non-restraint, by which, of course, he does not mean absolute freedom for an insane person to do as he pleases, but the substitution, as far as may be practicable, of moral for physical force. He gives the following history of the introduction of the non-restraint system:

"After Pinel had inaugurated the milder treatment in France, and Tuke had commenced the same at the Retreat at York, the attention of philanthropists' minds became directed towards the unfortunate lunatics more generally, and great efforts were made for their amelioration; yet still all that was attempted at that period was to lessen the cruelty as much as possible, and to diminish the frequency of the use of instruments of coercion. Among the most active of those who endeavored to establish a kinder treatment was Dr. Charlesworth, who was visiting physician to the Lincoln Asylum. Dr. Charlesworth managed to reduce mechanical restraint to the lowest possible degree, and it was at this epoch that Mr. Gardiner Hill was appointed house-surgeon to the asylum. Mr. Hill strenuously assisted the benevolent physician in his exertions, and after doing all they could together it occurred to Mr. Hill to abolish restraint entirely. To Mr. Gardiner Hill, therefore, is due the idea of the treatment by non-restraint. I have heard Dr. Conolly assert this, and admit the merits justly due to these pioneers; but I will quote his words, as found in his 'History of Non-Restraint.' He says: 'All of us who have followed in the path of William and Samuel Tuke, at however great a distance, must ever acknowledge the extent of our debt to them. It is true that neither they nor Pinel ventured wholly to abolish mechanical coercion; this was left for Charlesworth to attempt, and for Gardiner Hill to carry out at Lincoln, and for Hanwell to confirm on the largest scale.'"

Dr. Sankey's description of General Paralysis, or as he—very properly, we think—prefers to call it General Paresis, is the best we know of in the English language. Within the compass of about forty pages he has managed to present a most excellent picture of this formidable disease—a disease which, unhappily, is becoming much more frequent than it was a few years since. He regards a fatal termination as the rule, although well marked cases of recovery have been noticed. M. Baillarger records nine instances of cure. In his excellent work on General Paralysis, Austin expresses the belief that as our knowledge advances it will not be found more incurable than phthisis, albuminuria, or valvular disease of the heart. The first stage of the malady he regards as indeed hopeful.

We commend Dr. Sankey's lectures to all physicians who are interested in psychological medicine, and who wish to read a well written, sensible and practical book.

REPORTS ON THE PROGRESS OF MEDICINE.

I.—MATERIA MEDICA.

[Continued from page 236.]

22. *Therapeutic Employment of Anthracite Coal.* (Annuaire de Thérapeutique, 1866.)

M. Dyes, chief medical officer to the Hanoverian regiment of Hussars of the Guard, having noticed that hogs ate with avidity mineral coal, and finding that such as took it mixed with their food became very lively, with increased appetite, and gained flesh and fat rapidly, he determined to administer it in abdominal diseases in the human subject. The experiment, he states, was entirely successful in gastric catarrh, cramps of the stomach, anorexia, chronic icterus, habitual constipation, chronic diseases of the intestines and of the skin; intestinal worms, including tænia, etc. He gives from 15 to 30 grains in the course of the day, in the pulp of prunes, extract of dog-grass, or in pills made up with the extract of beef's gall, cinchona, quassia, etc.

23. *Wine and Syrup of Cinchona and Iron.*

M. V. Garnier proposes the following formula for both a ferruginous wine and syrup of cinchona, the addition of a small quantity of citric acid assuring the transparency of the syrup: R. Cinchona, well bruised, 60 parts; brandy, 50 parts; Malaga wine, 1000 parts; solution of citric acid (⅓d), 6 parts; all by weight. Digest for four days, and filter by displacement. R. Malaga wine, 1000 parts; ammonio-citrate of iron, 25 parts; by weight. Mix the two wines, and filter after twenty-four hours. This preparation is palatable, and keeps perfectly. It contains rather more than one grain of the citrate of iron, and about the same of the active principles of cinchona to the ounce. By saturating the wine with a sufficient quantity of sugar a beautiful ferruginous syrup of cinchona is made, which will be found an excellent preparation for children.

From the report of MM. Lefort and Mayet it would appear that to obtain a ferruginous syrup of cinchona, in which the iron and cinchona are only mixed, without chemically reacting on each other, it is necessary to use the syrup of cinchona made with Malaga wine instead of water.

24. *Pulverized Nitrate of Silver in Croup.* (Bull. Gén. de Thérap. April, 1866.)

M. Guillon believes that by the introduction of finely pulverized nitrate of silver into the pharynx and larynx in croup the formation of false membrane may be prevented; and he describes and figures an instrument through which the powder is projected against the pharynx and behind the half arches.

A much more convenient and effectual mode is by means of the spray apparatus of Richardson, Maunder or Bergson, the salt, in solution of proper strength, being directly applied in the form of a finely pulverized fluid, the patient breathing easily during the operation, when it is desirable that the remedy should reach the larynx or trachea.

25. *Arsenite of Strychnine.* (Annuaire de Thérapeutique. 1866.)

The following process is recommended as the surest for the manufacture of this salt: Caustic potash, 3 grammes, 12 centigrammes; arsenious acid, 3 grammes, 30 centigrammes; distilled water, 40 grammes. The water being made to boil, dissolve thoroughly the potash; then add the arsenic, which is readily dissolvable in the alkaline solution. Then take of monohydrated sulphuric acid 2 grammes, 65 centigrammes, and dilute it with 20 grammes of boiling distilled water, and add of pure crystalized strychnia 12 grammes. The two solutions being at the temperature of 75°, Fah., pour the solution of the arsenite of potash into that of the strychnia. Bring the solution to the boiling point, and filter; the insoluble matter remaining on the filter is nearly entirely composed of the sulphate of potash. Evaporate nearly to dryness the filtrated liquid, redissolve in absolute alcohol the resulting salt, to separate completely the remains of the sulphate of potash. Wash the residue of the first filtration with absolute alcohol several times, to dissolve completely the salt of strychnia. Add the two alcoholic solutions together, and concentrate with gentle heat. At the end of two days cubic crystals of the arsenite of strychnia, of a dull white color, will be formed, which effloresce on exposure to the air, are of metallic and bitter taste, soluble in alcohol, less soluble in ether, and dissoluble in ten parts of boiling water and thirty-five parts of cold water. Dose, one-fifth of a grain.

26. *Preparation of Copaiva without Smell or Taste.*

Dr. Beyran recommends the following tasteless and inodorous preparation of copaiva: Take of copaiva and tar, of each ℥j.; magnesia, a sufficient quantity, according to the degree of consistency required.

27. *Camphorate of Quinia.* (Annuaire de Thérapeutique. 1866.)

This new salt of quinia is prepared by dissolving a given quantity of crystalized camphoric acid in five times its weight of alcohol, at 36°, Beaumés, in a porcelain capsule in a water bath at a temperature of 75°, Fah. Pure quinia is then added to the point of perfect neutralization, without increasing the temperature beyond 70°, Fah. Evaporate to dryness. The formula for exhibition preferred by M. Bouchardat, is: R. Camphorate of quinia, antimoniate of quinia, of each 6 grains; extract of cinchona, q.s. Mix and divide into ten pills; one to be given every half hour. This he asserts is a most efficient remedy in malarial fevers and the neuroses.

28. *Urethral Cerate.*

Where there is erosion or ulceration of the urethra, or fungous or polypiform growths, Dr. Beyran proposes to smear wax bougies with a cerate composed of white precipitate, 15 grs.; extract of cicuta, 30 grs.; purified lard, four scruples. They should remain in the urethra from ten to fifteen minutes.

29. *Turpentine as a Dressing for Wounds.*

M. Warner, surgeon to the large manufacturing establishment of MM. Dollfus, at Mulhouse, France, has employed the following dressing for wounds during the past five years, with entire success. Though many of them were of the most serious nature, he has never had a case of purulent infection. R. Turpentine, 1,000 grammes; bicarbonate of soda, 25 grammes; distilled water, 10 litres. Digest in a water bath, at a temperature of 112°, Fah., for one week; then filter. It is cheap, and keeps well. A compress is wetted with the liquid and placed over the wound, and covered with a piece of oiled silk. Every three or four hours the compress is moistened with the liquid from a sponge, and renewed once in twelve hours.

30. *Fluid Extract of Buchu.* (The Richmond Medical Journal, May, 1866.)

In the preparation of the Fluid Extract of Buchu alcohol does not extract the entire medicinal virtues. The active properties of buchu depend upon a peculiar oil, and an extractive and a gummy matter. The diuretic properties reside in the latter principles. The extract, as prepared by the United States Pharmacopœia, is an alcoholic solution of the oily and resinous principles. A cold infusion of buchu will produce diuresis; the officinal alcoholic extract little or none. Mr. W. H. Laster, Apothecary to the Charity Hospital, New Orleans, proposes the following formula for the preparation of the extract, by which, he claims, all the active principles of buchu are obtained. R. Buchu, ℥ xij.; alcohol, f℥ xxxii.; water, f℥ viii. Reduce the buchu to a coarse powder, moisten with eight fluid ounces of alcohol, and press firmly in a glass percolator; pour on alcohol, until thirty-two ounces of tincture are obtained. Evaporate this tincture spontaneously to four fluid ounces; withdraw the leaves from the percolator, and pour upon them eight fluid ounces of water; digest by a water bath at 100°, F., for two hours, observing to press the leaves firmly into the water; at the end of the above time strain and very firmly press the digest from the leaves; supply the water, lost by evaporation and absorption, by pouring a small quantity upon the leaves, and again expressing and straining; add the requisite amount of this liquid to that first obtained by expression. Allow the digest thus brought to the proper measure (eight ounces) to rest several hours, decant from the sediment, and to this liquid gradually add the evaporated tincture, and when thoroughly mixed, strain through close flannel.

31. *Sulpho-Arsenite of Quinine.* (London Lancet, Jan. 13, 1866.)

Signor Vincenzo Marletta thinks that the arseniate of quinine is too dangerous a medicine for general use. He proposes to substitute for it the above named salt. It is prepared by saturating an aqueous solution of arsenious acid with an alcoholic solution of tribasic sulphate of quinine, almost to neutralization; the solution is then evaporated and the crystals are formed. It is administered safely in the proportion of five decigrammes of the salt to two grammes of sugar.

32. *Fluid Extract of Senega.* (The Richmond Medical Journal, June, 1866.)

Mr. Laster gives the following formula: R. Senega, ℥xij.; water, 1 pint; alcohol, 3 pints; sugar, ℥viij. Reduce the senega to a fine powder, and moisten it with twelve fluid ounces of a mixture of the water and alcohol; press the moistened mass lightly and evenly in a conical glass percolator, and pour on the mestruum till 3½ pints are obtained. Evaporate this liquid by a water bath, until reduced to 8 fluid ounces. Filter when cold, and dissolve the sugar with gentle heat. To each fluid ounce of the extract, when cold, add ½ of a fluid drachm of alcohol, and water sufficient to make the preparation measure 12 fluid ounces.

33. *Hydrated Silicate of Magnesia as a Substitute for Subnitrate of Bismuth.* (Jour. de Méd. et Chir. Prat., May, 1866.)

This is the same substance from which meerschaum pipes are made; though never analyzed, it is probably a silicate of magnesia and lime. It is recommended as a cheap and efficient substitute for subnitrate of bismuth. It is highly recommended by Dr. Garrand, of Laval, France, in choleraic diarrhœa. Dr. Trousseau has for some time given it in diarrhœa. etc., with success, in doses of four, eight, and ten grammes, reduced to a fine powder and suspended in water.

34. *Dilute Sulphuric Acid as a Prophylactic in Cholera.*

Dr. Henry MacCormac, of Belfast, in a recent number of the *Medical Press and Circular*, strongly recommends and urges upon the attention of the profession, from large experience, the advisability, coupled, however, with every proper general sanitary precaution, the prophylactic efficacy of dilute sulphuric acid, a drachm in peppermint water daily, during the prevalence of Asiatic cholera. In the Belfast District Asylum for the Insane this preventive plan was, Dr. MacCormac asserts, of infinite value, no instance of the malady occurring after its use.

Might not *the bisulphites* be administered with this object advantageously?

35. *Chlorodyne.*

The following is given as an authentic formula for chlorodyne: ℞. Morphiæ hydrochloratis, grs. xvj.; alcohol, f℥iss.; chloroform, f℥j.; syrupi fusci, f℥ivss.; olei menthæ piperitæ, fʒj.; acid hydrocyanici (Scheele's), fʒiij.; aquæ ad f℥viij. Dissolve the morphia by means of a water bath in the spirit; put the chloroform and treacle together in a bottle, and shake violently for five minutes, when they will mix intimately; then add the mixture of morphia, which must contain the oil of peppermint and the acid.

Half a drachm contains one-eighth of a grain of morphia and one minim and a half of hydrocyanic acid, nearly.

SUMMARY.—*Opium in Pneumonia.* The exhibition of full doses of opium in pneumonia is highly praised by Inspector-General Dr. Muir, of the British Army, in an excellent lecture lately published in the last volume of the "British Army Medical Reports."

Improvements in the Pharmacy of Fluid Extracts. By A. J. Semmes, M.D. (The Richmond Medical Journal, June, 1866.)

Veratria in Rheumatic Irido-Choroiditis. (Bulletin Gén. de Thérapeutique. 1866.)

Dr. D. Martin, of the French army, reports a case which rapidly yielded to veratria and quinine, after other means had failed.

Liquid Styrax in Itch. (Berliner Klinische Wockenscrift.)

Dr. Pastau, of Breslau, has found liquid styrax (benzoinum) the most certain of anti-psorics, superior to the balsam of Peru. ℞. styrac. liq. ℥i.; olei olivæ, ʒij. One or two embrocations of f℥ss. over the body, head excepted, after a warm bath, suffice. Time of treatment from one to two days. The clothes to be subjected to a temperature of 50°, Reaumur.

Of the Antagonism between Opium and Belladonna, especially with reference to Subcutaneous Injections. By Dr. Fraigniaud. *Memoir read at the Society of Medicine, of Paris, March* 2, 1866. (Gazette des Hôpitaux, May 1, 1866.)

The conclusion arrived at in this interesting paper, sustained by numerous cases, is that atropia and morphia, administered in combination subcutaneously, are not toxically antagonistic.

Coca as a Nervous Stimulant, and in Cholera. (Bulletin Gén. de Thérap., etc. 1866.)

Dr. Reis recommends the *erythroxylum-coca*, or *peruvianum*, as a nervous stimulant, and in cholera. Dose, 2, 3 or 4 grammes, repeated when necessary. It may be given in the form of powder, infusion, extract, elixir or syrup.

Squill in Hypertrophy of the Spleen. (All. Med. Cent. Zeitung and L'Union Médicale, March 3, 1866.)

Dr. Hennighe reports a case of enormous spleen reduced in three weeks by the use of fifteen drops of the tincture of squills, five times a day.

Arsenic in the Treatment of Intermittent Fever, Neuralgia, Herpes, and other Diseases. By Dr. Hypp. Barella, of Belgium. (L'Union Médicale, March 20, 1866.)

On the Use of Blood as a Medicine. By Gaetano de Pascale, M.D., Nice. (British Med. Jour., May 5, 1866.)

The Uses of Medicinal Sulphites and Hyposulphites in Zymotic Diseases. (Med. Times and Gazette, May 5, 1866.)

Citric, Acetic and Carbolic Acids in Cancer. By J. Barclay, M. D. (British Med. Jour., April 21, 1866.)

Tar-Water to Prevent Recurrence of Boils. (Journal de Médecine et Chirurgie Pratiques, March, 1866.)

Dr. Hardy believes, after numerous trials, that tar-water is a most efficient remedy to prevent the recurrence of boils.

Phosphorus and its Therapeutic Applications. (Annuaire de Thérapeutique. 1866.)

II.—HYGIENE.

1. *Dr. Thudichum on the Effects of Diseased Meat.* (British Medical Journal, April 28, 1866.)

At the ordinary meeting of the Society of Arts on the 18th instant, Dr. Thudichum read a highly elaborate and instructive paper on "Diseases of Meat as Affecting the Health of the People." The first class spoken of was that of specific diseases capable of being communicated to man. Of this he recognized only one example—malignant pustule or anthrax; and, admitting the fact of the communication of the disease through wounds, he did not find sufficient evidence to warrant the belief that man could be infected by eating the flesh of animals so diseased. Nor was there any satisfactory evidence of injurious effects to health arising from the use of the flesh of animals which had diseases of a second category—those which did not produce the same specific disease in man, such as pleuro-pneumonia. At the same time, he thought it reasonable "that all meat upon which the evidence of disease can be discovered should be condemned; and that all meat coming from diseased animals, if allowed to be sold at all, should be caused to be offered as such in the market, although it be of ordinary appearance." The third class of diseases of meat which he noticed was the parasitic, and in it he gave a full account of trichinæ, their origin, development and effects; and, *inter alia*, mentioned the remarkable fact (which, however, appears to require further confirmation) that trichinæ may exist alive in the encapsuled state for thirty years. Thorough cooking of meat was recommended as the only means of destroying the parasites. The reading of the paper was followed by some remarks from Dr. Cobbold and the Chairman, Professor Owen.

2. *Hygienic Treatment of Cholera.* (Lancet, June 2, 1866.)

The isolation and careful hygienic treatment of the cholera patients at Liverpool have apparently been thus far successful in preventing the extension of the disease. Whatever may be the doubts as to treatment of the disease by drugs, medical research, by demonstrating the sources of contagion in the drinking water, discharges of patients, and contaminated soil around cholera habitations, has pointed out the means of limiting the disease. It may yet be found that cholera thus combated is one of the most thoroughly preventable of epidemic disorders.

3. *Revaccination in the Prussian Army.* (Medical Times and Gazette, April 14, 1866.)

The annual report on the vaccinations practiced in the Prussian Army during 1865 has just been published. During the year 65,776 soldiers were either vaccinated or revaccinated, 56,895 of the number having distinct scars from former vaccinations, 6,143 with indistinct scars, and 2,738 exhibiting no marks at all. These 65,776 vaccinations ran a regular course in 41,334 individuals, an irregular course in 8,326, and were unsuccessful in 16,166. These last were vaccinated again, and with success in 5,469 instances, so that the total of successful cases amounted to 46,803. The number of true vaccine pustules produced were as follows: From 1 to 5 pustules in 24,154, from 6 to 10 in 13,830, from 11 to 20 in 8,075, and from 21 to 30 in 744. Among the soldiers successfully revaccinated there occurred during the year 3 cases of varicella, 6 of varioloid, and 1 of variola. Thus the proportion of completely successful revaccinations amounted to 62 per cent., and, including those in which the vaccination was not followed by regular vaccinia, 71 per cent.—a proportion very similar to that which has been observed during the last ten years. Notwithstanding the frequent occurrence of variola amongst the civil population during the year, to the contact of which the soldiers were more or less exposed, there occurred only 69 cases of any form of pock. Of these, 35 (2 cases of varicella, 30 of varioloid. and 3 of variola) occurred in soldiers not yet revaccinated; 24 cases (4 of varicella, 18 of varioloid and 2 of variola) in persons revaccinated without success; and 10 cases (3 of varicella, 6 of varioloid, and 1 of variola), as already stated, in those who had been successfully revaccinated. These cases were of a very slight description, only one person dying during the year, and he succumbed to a catarrhal affection, during the progress of which variola appeared.

4. *Dilution of Vaccine Lymph with Glycerine.* (Medical Times and Gazette, May 19, 1866.)

Geh. Medicinalrath Müller, director of the Berlin Vaccine Institution, has just published a communication concerning vaccine lymph which he regards as of considerable importance. After adverting to the well known difficulty of obtaining vaccine lymph in sufficient quantity, especially when large numbers have to be speedily vaccinated or revaccinated during the prevalence of epidemic small-pox, he observes that it is, therefore, a matter of great importance to be in the possession of a means by which every practitioner may preserve for himself an ample store of this precious substance. Such a means is to be found in mixing the vaccine virus with diluted glycerine. Without in anywise interfering with its efficacy, this increases its quantity and its power of keeping. Finding that the vaccine scab is best dissolved in glycerine, and impelled to seek for some adjuvatory means by the numerous applications he received from every province of Prussia, as well as from foreign parts, the author was induced to try the effect of some lymph which he had mixed with diluted glycerine, and the results were in the highest degree encouraging. While augmenting the vaccinating material ten or twenty fold, the pustules which resulted, neither in their course, appearance, the amount of lymph they contained, or the reaction they gave rise to, differed in any degree from the pustules produced by the purest lymph. The proportion cannot be exactly determined, because the quantity taken up by the pencil cannot be weighed or measured; but as an example it may be stated that lymph from three pustules having been mixed with diluted glycerine, served not only to vaccinate several children, but to charge about forty capillary tubes. Lymph which has been preserved in tubes can be similarly treated with the glycerine, but it will be best only to employ that which has been kept in them for a few days or weeks. How far the dilution of the lymph can be carried without damaging its efficacy is being tried. At present the results have been found uncertain when diluted more than twenty times. Diluted only ten times, they are always certain.

If these statements are admitted, as they must be, it results that the practitioner may always be in possession of a sufficient supply of reliable lymph, which may easily be stored up, seeing that the lymph enters the tubes with greater facility than in its undiluted state, and keeps much better. With the lymph derived from a single child a whole battalion of recruits may be revaccinated. The vaccinator may, too, not so pressed for lymph as heretofore, exercise more caution in selecting the subjects for supplying it. On account of its greater preservability, this mixed lymph will also far better bear transmission to distant countries and tropical climates than does the ordinary free lymph. The great ease with which the tubes are filled without contact with the air, and then sealed, will much aid the employment of this diluted lymph. Dr. Müller's exact mode of procedure is as follows: Having opened some of the pustules of a child vaccinated eight days before, he collects the lymph which issues out upon a small, new hair pencil. The pencil is then moistened upon a glass or porcelain plate by means of from ten to twenty drops of chemically pure glycerine, diluted with equal parts of water —the whole being most thoroughly mixed together by means of the pencil. With this mixture vaccination is immediately performed, or capillary tubes are filled with it and sealed for future use.

5. *Law and Ventilation.* (British Medical Journal, March 24, 1866.)

The superintendence of the ventilation of the House of Commons and the Law Courts at Westminster is in the hands of Dr. Percy; but Dr. Percy cannot always have his way in the Law Courts. There the judges rule supreme; and one of the body, Lord Chief-Justice Cockburn, has, it appears, an especial and insuperable objection to fresh air, or, at all events, to currents of fresh air. He therefore, a few weeks ago, had the ventilating process of his court arrested; and the results are shown in the following statement, which tells of the analysis of a few bottles of air, and which were taken from the court when it had become what the Lord Chief-Justice considered comfortable:

"Some specimens of air from the Court of Queen's Bench were recently examined by Dr. Angus Smith. He reports that 'they are the most deficient in oxygen of any specimens found by me during the day in inhabited places above ground. The first is almost exactly the same as the average found in the currents of galleries in metalliferous mines; that from the lantern is nearly the same as the specimens found close to the shafts of the same mines, meaning, of course, the average of many specimens. I have not known any mills or workshops so deficient in air. I consider a room bad when it loses one thousand, and workshops very bad when they lose two thousand of oxygen out of a million parts; here the loss is actually five thousand less than the parks of London. The circumstance is strange, and I hope unusual. A scientific friend happened to call my attention to it, and wished me to examine the air. The moisture from the window was collected, and there were several ounces obtained, and more might have been easily found. It was perspiration in great part; the smell of it was distiuct. It is putrefying, and decolorizes more permanganate now than it did at first. Mere change of air will not purify a room like this—a current must pass through it for a long time until complete oxidation takes place.'"

6. *Baths.* (Medical Times and Gazette, May 12, 1866.)

We propose to treat of baths, their various methods of application, their action, and their uses. It may be accepted as proved that none of the constituents of baths are absorbed by the skin. Thus the effects they produce on the system must be due to their action on the skin in virtue of either their moisture, their temperature, or of the ingredients that the water may contain.

We shall first speak of the general cold bath—baths composed either of simple or of sea water, and whose temperature varies from 40° to 75°, Fah. These baths produce their effects by virtue of either their moisture or their low temperature. But cold baths are given for other effects than these. If properly used, the cold bath becomes one of the most powerful tonics we possess. If improperly applied, it may inflict serious mischief on the person using them.

On entering a cold bath a feeling of depression is first experienced. The pulse is greatly quickened, but loses much in force. The respirations are hurried and irregular. There is a feeling of chilliness with great diminution of the temperature of the surface of the body. This condition, however, quickly changes. The surface of the body glows; the pulse gains in force.

There is a sense of increased vigor both of mind and body, the spirits are greatly exhilarated. This continues for a variable period, and is then again followed by a feeling of depression accompanied by chilliness and a feeling of langour and exhaustion.

Baths are given for their tonic effects. To secure these it is necessary that the patient should leave the bath during the second stage. If left at this time the condition of that period remains during the rest of the day. Thus given, the appetite is increased and digestion and assimilation improved. There is increased vigor of the body, with a desire for exercise. The patient is cheerful, the spirits more buoyant. If, however, the bath be remained in, the depression of the last stage becomes permanent. The patient remains languid, fretful, irritable. The appetite is lessened. Much chilliness may be felt during the day. He is disinclined to exertion, and often experiences a sinking at the epigastrium. These results are to be most carefully avoided.

How long should persons remain in the water in order to obtain the greatest tonic effects? To answer this question in an individual case two points must be kept in mind—namely, the strength of the bather and the coldness of the water. With persons whose health has been impaired by excesses of any kind, by overwork, bad air, or who are convalescent from an acute disease, the first two stages pass quickly by, and they speedily pass into the stage of depression, which becomes permanent for many hours afterwards, and often for the rest of the day. Hence the time the patient be ordered to stay in the bath must be regulated to the vigor of his system. It is also most important to recollect that if the shock be very great, no second stage may occur, but the patient passes at once into the third stage and remains languid and depressed, with an impaired appetite during the remainder of the day. Thus it is important to regulate the shock to the strength of the patient. The amount of shock is dependent on the coldness of the water. Water, moreover, in motion, as is the case with the shower bath, produces much more shock than water at rest.

Persons unaccustomed to bathing, if in health, should only stay in the water ten to fifteen minutes. Should they prolong their stay in the water, the bath is liable to produce much depression, and consequently fails to produce the desired tonic effect. By habit, however, the system becomes accustomed to bathing, and thus after their frequent use persons can often remain in the water half an hour or longer with good result. If the patient's health be much depressed, he should be directed merely to dip into the water and allow a billow to wash over him, and then immediately to leave the water.

In determining the temperature of the water we must have regard to the strength and condition of the patient.

Persons of plethoric habit must bathe with much caution, for the excitement produced in such people may be too great, and thus headache, giddiness, and congestion of the brain may follow the use of the bath.

Children under two years of age should not have cold sea or fresh water baths given them. Warm sea bathing for such is preferable, or the cold bath may be administered in the following way: The child must be placed (or, if too young to stand, held) with its feet in warm water, and before a good fire, and cold water should be poured over the body for one to two minutes. The water should not be applied to the head. When administered in this way, very young children may have cold baths given them with the very best result. The same method should also be adopted with older children if they be weak, or if the weather be very cold, or the water may be slightly warmed in addition.

May pregnant women bathe? If they have had previous abortions, if they be nervous and irritable, baths had better be abstained from. Under other circumstances, both the mother and child will be much benefited by sea bathing. It is also unadvisable to commence a course of bathing at the time of menstruation, and at first bathing should be discontinued at these periods.

Patients who are very weak should not at once commence to bathe in the cold sea. In such people cold bathing is apt to cause shivering, trembling, a feeling of excessive fatigue, and with loss of appetite and other symptoms. If such symptoms occur, or if the patient be considered too weak for cold bathing, tepid baths should be used, and the temperature of these should be daily lowered until the temperature of the sea is reached. Weak people should bathe in a calm sea. Too much exercise in the water should be avoided by weak people, as such are liable to be easily fatigued, and then depression follows.

At what time of the day can patients bathe with the best results? At that time when they are least liable to be depressed. Early in the morning, when the system is fasting, such a result is very liable to occur. Invalids, therefore, should be prevented from bathing before breakfast. But due time must be allowed for the digestion of the meal, as any strong impression on the mind or body is liable to arrest or destroy digestion. Therefore two hours should elapse after breakfast, and three after dinner, before the bath be taken. At this time also the water is warmer. It is preferable to take the bath after breakfast than later in the day. Even strong persons unaccustomed to bathing are liable to be much depressed by a bath taken before breakfast. Children should never bathe before ten or eleven. The patient must be directed to plunge at once into the water, and not to stand shivering for some time until the surface of the body is cooled. He should dip down and allow each wave to pass completely over him. It is the temperature of the sea to which we must have regard when we give direction to patients at what time of the year they may bathe with advantage. If the patient be very weak, he must not indulge in much physical or mental exertion after the bath, as such exercise is apt to cause over-fatigue. Various irregularities of the various functions of the body are apt to occur at the commencement of a course of bathing. Thus constipation is not infrequent. This must be remedied by purgatives, diet, or exercise. It need not hinder the bathing. If dyspepsia or diarrhœa occur, it is better to suspend the baths for a short time. Irregularities of the menses need not cause the patient to desist from use of baths. Restlessness at night sometimes occurs at their commencement. If this be not very great, the baths may be continued. The diet of the patient should be carefully regulated. Stimulants should mostly be abstained from previous to the time of going to bed. Before entering the bath care should be taken that the body be not overheated by exercise; on the other hand, the patient should not be cold and chilly Thus it s often desirable that slight exercise should be taken previous to their use.

III.—THEORY AND PRACTICE OF MEDICINE.

1. *Trichinosis.*

The *Medical Times and Gazette* gives an account from the *Deutsche Klinik* of an outbreak of this disease at Hedersleben, a town of some 2,000 inhabitants, in Prussian Saxony. Within three weeks after eating of the diseased pork, which came from a single establishment, there were three hundred cases, with forty deaths. (According to another account there were one hundred deaths.) This, however, does not represent the whole number of cases, as many persons, alarmed at what was styled a cholera panic, left the town; of these several died. At the autopsies numerous "parent trichinæ" were found in the intestinal mucous membrane, the bulk of the animal being in the intramuscular structure. Upwards of one hundred children were attacked, but all recovered. This result was attributed to the more active condition of the alimentary canal in childhood, an observation that was corroborated by the unfavorable results in some of the early cases that were treated with opium. The immediate cause of death seemed to be paralysis of the inspiratory muscles—the most alarming symptoms, besides the loss of motion, being profuse sweating, persistent wakefulness, small and quick pulse, and severe abdominal pains. The convalescence resembled that of typhus fever. Benzine, as a remedial agent, was largely used, but with no good results, it being ascertained by experiment that the trichinæ would exist for half an hour when placed in pure benzine.

The same journal also reports that outbreaks of this terrible disease keep occurring from time to time in Germany. One has recently occurred in Zittau, in Saxony, but unaccompanied by fatal cases, although as many as fifty-seven persons were affected after partaking of ill prepared sausage meat. Dr. Küchenmeister, having no faith in benzine, recommends, in recent cases, equal parts of turpentine and sulphuric ether, with what effect remains to be seen. In two of these cases the trichinæ were detected by harpooning, and, as in other epidemics, children suffered least, while in several women menstruation was precipitated. In Görlitz, in Silesia, there has also been an outbreak, eighty persons being affected, but only one dying. All over Germany, either through the agency of the butchers themselves, whose trade is threatened with extinction, or more often by decrees of the various Governments, means are everywhere being organized for an effectual microscopical examination of the pork before delivery for sale.

The *British Medical Journal*, April 7, 1866, says that Professors Delpech and Reynal, who were charged with a mission to study the trichinosis in Germany, have presented a report of their investigations at Huy (Belgium), Hanover, Magdeburg, Berlin, Halle, Dresden, Leipsic and Mayence. They solicited and obtained the co-operation of most of the eminent German physicians who had made the disease in question their especial study. The chief practical facts ascertained are as follows: The epidemic trichinosis lately prevalent in Germany has now almost entirely disappeared. The mortality was everywhere slight, except at Hedersleben. At Zwickau, Seltendorf and Sommerfeld there were eighty-eight patients, not one of whom died. In every case the disease was caused by eating imperfectly cooked pork containing trichinæ. In Hanover, in twenty-one months, out of twenty-five thousand pigs, eleven were found full of trichinæ, sixteen out of fourteen thousand in Brunswick, and four out of seven hundred in Blakenburg. In France no case of the disease has yet been noticed. In Germany the hospitals receive many patients suffering from this affection; during the last year there were thirteen at Madgeburg, of whom only one died. Post mortem examinations have also shown, among persons who died from other diseases, numerous cases of old trichinosis cured by the encystment of the parasites. The proportion of these at Leipsic has been about six per hundred. In places where the complaint prevails, the rats which infest slaughter houses are found to have it, as proved by Leisering at Dresden, Adam at Augsburg, and Roll at Vienna. Since their return, MM. Delpech and Reynal have examined many of these animals, as well as pigs, without finding a trace of trichinæ. Consequently, there is no reason in France for any person to refrain from eating hog's flesh, especially when thoroughly cooked. In Germany many of the peasantry eat it almost raw, or only smoked. The most timid may safely eat the heart, liver, kidney, brain and fat of pigs, as those parts never contain trichinæ. MM. Delpech and Reynal assert, as an undoubted fact, that a temperature of 167°, Fah., is sufficient to kill trichinæ. Meat thoroughly salted is also perfectly safe. Smoke-dried sausages, which have been kept a long time, are considered free from danger, but the wisest plan is to give them a good boiling. The authors of the report attribute the spread of the disease among pigs to the fact that they are foul feeders and will eat any offal, such as the dead bodies of rats and other animals, which are now known to be liable to trichinosis. Great care ought therefore to be taken to keep such things out of their reach. MM. Delpech and Reynal likewise advise all experimenters never to throw away trichinized flesh, but to burn it as soon as their examination is completed; for a fragment of it carelessly exposed might be eaten by a rat, the rat devoured by a pig, and this last become the cause of fatal accidents. They recommend farmers to be very cautious in feeding their pigs, to avoid giving them offal flesh without first boiling it, to destroy rats and other small carnivorous animals, and never to leave human or other excrements in places where pigs can go.

Virchow says that a kind of natural cure of trichinosis is the encysting of the trichinæ. When shut up in a cyst, the wanderings and further development of the animals are arrested. They become imprisoned, and show no signs of existence in their then feeble state of vitality. Art can do nothing here in the cure. The attempt to assist the encysting process by giving phosphates and acetic acids is founded on a false idea; for it is not the calcification of the cyst, but the formation of it, which is essential. If the patient live long enough to allow of the formation of the cyst, in all probability the trichinæ will not afterwards destroy his life. It is possible, he adds, that some remedy may be found which will kill the trichinæ without destroying the patient; but assuredly none such has as yet been discovered. The most dangerous guests are the muscular trichinæ, and to find a remedy to kill them would indeed be of the highest benefit. In the meantime, we must remember that the intestinal trichinæ produce the brood of young animals which wander through the body into the muscles. The longer, therefore, these breeding animals are allowed to remain in the intestines, the greater will be the progeny set free in the body, and therefore the more destructive the disease. Hence it is of the highest importance to attempt to remove at once the breeding animals from the intestines by emetics and purgatives.

A committee of the Chicago Academy of Sciences have prepared an elaborate report on this subject, in which, after a very accurate and minute account of the natural history of the *trichina spiralis*, they give an analysis of the specimens submitted to examination. Portions of muscle from one thousand three hundred and ninety-four hogs, from the various packing houses and butcher stalls of Chicago, were examined, and of these twenty-eight, or about one in fifty, were found to contain trichinæ in greater or less numbers. "We must confess," they say, "our surprise at arriving at this result, which indicates, with little doubt, the startling fact that trichiniasis in pork is much more common in this country than in Germany, where it has caused so much suffering and death."

The specimens examined show great variation in the number of worms infesting them. Only three were found to contain over ten thousand to the cubic inch, and "therefore as densely infested as the pork which occasioned the recent disasters in Germany." The observations of the committee as to the muscles of the hog most liable to be infested do not accord with those of the European experimentalists, inasmuch as more than half of the trichinous specimens were taken from the spinal muscles. The means of defense against its ravages, and the advice given in reference to the rearing of hogs so as to avoid this troublesome pest, are essentially the same as those suggested by Professors Delpech and Reynal (vide ante), the degree of heat necessary to destroy the parasite being stated at 160°, F. The report concludes with a review of the economical aspects of the subject, and the opinion is given that as pork is the "kind of meat-diet upon which nine-tenths of our agricultural population, north and south, mainly depend, it would be folly to discard this kind of meat from our list of articles of food, when all possibility of injury attending its use may be avoided by the most simple means."

Dr. E. M. Smith, of Marion, Iowa, communicates to the Chicago *Evening Journal* an account of a family of ten persons under his care, nine of whom were attacked with trichinosis. Of this number, three died, and two others were not expected to recover. A microscopical examination revealed the presence of vast numbers of the *trichina spiralis* in the muscles of those who died. No mention is made of the treament.

2. *Functional Nervous Aphonia, Treated by the Direct Application of a Galvanic Current to the Vocal Cords.*

Dr. Mackenzie, of London, in an article published in the *Dublin Medical Press and Circular*, January 10, 1866, after replying somewhat pointedly to the exceptions which have been taken by Dr. Watson, of Glasgow, to the use of the laryngoscope and laryngeal galvanism, narrates, briefly, six cases where galvanism was used in this complaint with the most satisfactory results. Two of the cases required but a single application. He remarks: "In all of these cases suitable local and general treatment had been previously ineffectually tried, and in four out of the six external electricity had been employed in vain. The success which I have met with by treating cases of functional aphonia in the way described has been almost equaled by others who have used this method. Dr. Fauvel, of Paris, has successfully treated a large number of cases in this way, and Dr. Smyly, of Dublin, has not been less fortunate. Dr. George Johnson has also recorded the case of a youth whose voice he restored by the internal application of galvanism. It is of the utmost importance that the pole of the galvanizer should be applied directly to the vocal cords. If it is merely introduced into the upper part of the larynx it generally fails to restore the voice. The application is not at all painful, though rather disagreeable."

A case of hysterical aphonia at Guy's Hospital, under the service of Dr. Pavy, is described in the *Medical Times and Gazette* of February 17, 1866, where a patient, who, after a severe fright, had not spoken a word for seven months, recovered her voice under the intimidating effects of galvanism. An instrument in use by a paralytic patient was set to work, and the girl was made to grasp the handles. "The battery was not strong enough to yield any powerful shock, and she did not utter any sound, although she cried and moved her mouth as though attempting to speak. She was told that a more powerful battery would be used another time, if she did not find her voice, and that she was meanwhile to make every effort to speak. The next day she had a fit of hysterics, and afterwards uttered some sounds. She now began to speak, and in the course of a few days talked as freely as any patient in the ward."

3. *Diphtheria, Treatment of, by Lime Inhalations.*

Dr. H. McElderry details, in the *Medical and Surgical Reporter*, the history of a well marked case of diphtheria which had resisted other treatment, but yielded promptly to inhalations of the fumes of lime, after the method advised by Dr. Geiger, of Ohio. This is simply by pouring boiling water upon lime, and allowing the patient to freely inhale the fumes. The instantaneous relief afforded by the inhalations, after the failure of other remedies, led him to attribute the very fortunate and successful issue of the case entirely to their influence.

4. *Hydrophobia, Treated by Mercurial Salivation.*

The *British Medical Journal* for June 2, 1866, records a case of this disease which occurred at Wolverhampton. The patient, a servant girl, while tying up a dog that had manifested signs of rabies, was bitten on her right thumb. She experienced no serious results until about a month after the mishap, when her thumb, arm and chest became considerably swollen, accompanied with great heat, pain, redness, stiffness and numbness. The second day after the occurrence of these symptoms a surgeon was summoned, who found her evidently suffering from hydrophobia, the result of the bite of the dog. The following night she became very ill, biting and tearing at every thing near her, and suffering much from convulsions, and manifested every symptom of this dreaded disease. The treatment was that of inducing "*profuse salivation, with a view of neutralizing the poisonous character of the saliva of hydrophobia.* This is a course of procedure not often pursued, but its beneficial effects were soon apparent." The convulsions ceased, and at the date of the report there was every prospect of her ultimate recovery. The *Lancet*, in commenting on the above case, says: "This method of treatment has been largely employed, and without any success. It was at one time much trusted to, but constant failures have caused it to be laid aside."

(To be continued.)

VARIA.

The War in Europe.—Before this number of the Journal reaches our readers the war between Prussia and Italy on the one side and Austria on the other will doubtless have commenced. It is not to be expected that many new lessons will be taught by it in medical or surgical science, for since the Crimean war and our own great struggle no inventions in arms or other military appliances have been made calculated to overturn the experience already gained by military surgeons. So far as obtaining transportation or in providing accommodations for the sick and wounded are concerned, the difficulties to be encountered will be small, compared to those we had to contend with in our early campaigns. Europe is always ready for war; we have always been unprepared for it, and even now, if hostilities were to break out between us and any other power we should be almost as badly straitened for surgeons, hospitals, and comforts for our invalid soldiers, as we were immediately after the first battle of Bull Run and the year subsequently. Whether the evils consequent upon the maintenance of a large army, with all its paraphernalia, would not be greater than those arising from our unpreparedness, is a question which we in this country have settled for ourselves with our eyes open.

Aside, moreover, from the fact that ample provision—so far, at least, as governments can make it—has already been made by the contending powers, for their future sick and wounded soldiers, the face of the country, its network of railways, its good roads and dense population, will greatly tend to mitigate the horrors which even at the best must be endured by those so unfortunate as to be placed *hors du combat* from disease or wounds. "Sanitary Commissions" will also doubtless be inaugurated, but it is notable that thus far Austria has declined to come into the treaty stipulations recognizing the neutrality of the medical service, which have been adopted by the other parties.

Till she does so the "Society for Alleviating the Condition of the Sick and Wounded" will be greatly restricted in its operations. Judging from personal observation, we should be disposed to venture the opinion that though European military surgeons are as skillful and humane as our own, they do not possess in so high a degree the faculty of adapting themselves to unfavorable conditions, or contending against unforseen exigencies. They are well trained, however, possessed of a great deal of *esprit du corps*, and will doubtless keep up the reputation which military medical officers in all parts of the civilized world have obtained for devotion and faithfulness to their profession, and, above all, to those committed to their charge.

It may not be improper to add, in this connection, that the foreign journals report a scarcity of medical officers in the Austrian service, so great that the government offers to engage students who have not yet completed their medical studies. We doubt not that an opportunity is here open to any of our surgeons who have acquired experience in our recent struggle to obtain for themselves high positions in the medical service of any of the contending powers, and to confirm that reputation which we have so justly gained by the provident and skillful care of the vast numbers of sick and wounded in our own armies.

University Medical College.—Dr. W. Darling, of London, has been appointed to the Professorship of Anatomy, made vacant by the resignation of Prof. W. H. Van Buren. Prof. John T. Metcalfe has also resigned his position as Professor of Practice of Medicine and Pathology, and Dr. A. L. Loomis, of this city, has been appointed his successor. Dr. J. W. S. Gouley has resigned his position as Demonstrator of Anatomy. Dr. Gouley is also elected Professor of Clinical Surgery, an original appointment. Dr. D. B. St. John Roosa, of this city, is elected Clinical Professor of Aural Surgery.

College of Physicians and Surgeons.—Dr. F. J. Bumstead, of this city, has been appointed Professor of Materia Medica, to fill the vacancy occasioned by the death of Prof. Joseph M. Smith. Dr. John T. Metcalfe is elected to the chair of Clinical Medicine, an original vacancy. Dr. Erskine Mason has been appointed Demonstrator of Anatomy, vice Dr. H. B. Sands, promoted Professor Adjunct of Anatomy.

Bellevue Hospital Medical College.—Dr. W. H. Van Buren has accepted the Professorship of Diseases of the Genito-Urinary System, an original appointment. Dr. H. G. Piffard has been appointed Assistant to the chair of Practical Medicine and Pathology.

New York Hospital.—Drs. Gouveneur M. Smith and C. E Hackley have been appointed Attending Physicians, vice Dr. J. M. Smith, deceased, and Dr. J. H. Griscom, resigned.

St Luke's Hospital.—Dr. Foster Swift has resigned his position as Attending Physician, and Dr. Charles W. Packard is appointed to fill the vacancy thus created.

Bellevue Hospital.—Dr. H. B. Sands has been appointed Attending Surgeon, vice Dr. Willard Parker, resigned.

A new hospital or "Home for Incurables" has been established, under the patronage of the Protestant Episcopal Church of this city, at West Farms, Westchester County. Such an enterprise is one that commends itself to all, and is worthy of every encouragement and support, for nowhere among our many public charities, except in the forbidding almshouse, is there offered a place for this class of patients. We trust that this institution, though inaugurated on a very modest basis, will soon develop into a large and well appointed hospital, that shall equal any we now have for the treatment of acute disease.

Stevens' Triennial Prize.—A Prize Fund of one thousand dollars has been established by Alexander H. Stevens, M.D., Ex-President of the College of Physicians and Surgeons, New York, for the improvement of Medical Literature, on the following plan:

Each prize, to be awarded triennially, is to consist of the interest yielded by the principal fund during the preceding three years, and will amount to about two hundred dollars.

The administration of the prize is entrusted to a commission, consisting of the President of the College of Physicians and Surgeons (ex-officio), the President of the Alumni Association (ex-officio), and the Professor of Physiology (ex-officio), in the same institution.

The following subjects have been selected, at the request of Dr. Stevens, for the first prize under this fund:

1st. The best means of preventing death after surgical accidents.

2d. The history of improvements in the medical art, and the means by which they are attained.

The competing essays on either of the above subjects must be sent in to the President of the College of Physicians and Surgeons, New York, on or before the 1st of January, 1869. Each essay must be designated by a device or motto, and must be accompanied by a sealed envelope, bearing the same device or motto, and containing the name and address of the author. The envelope belonging to the successful essay will be opened and the name of the author announced at the annual commencement of the College in March, 1869.

The Prize is open for universal competition.

EDWARD DELAFIELD, M.D.,
Pres't Col. Physicians and Surgeons.
ALFRED C. POST, M.D.,
Pres't Alumni Association of Col. Physicians and Surgeons.
JOHN C. DALTON, M.D.,
Prof. Physiology, Col. Physicians and Surgeons.

OBITUARY.—The painful duty devolves upon us of announcing the death of Dr. HENRY G. COX, of this city. Dr. Cox was a native of the Island of Bermuda, where he received his early English and classical education, taking his baccalaureate degree from Devonshire College in 1838. In 1846 he came to this city, and studied medicine under the late Dr. Cheeseman, graduating at the College of Physicians and Surgeons in 1849. He was immediately appointed House Physician at Bellevue Hospital, and soon after was called to a position on the medical staff at the Quarantine Hospital, Staten Island. The following year he resigned this position to accept the post of physician to the New York State Emigrants' Hospital, which place he held until 1855. In 1855, on the organization of the New York Medical College, Dr. Cox was appointed Censor, and subsequently Professor of the Theory and Practice of Medicine, and continued to occupy this chair until the breaking up of the college in 1864. Dr. Cox was also largely instrumental in the organization of the Nursery and Child's Hospital, to which institution he was an Attending Physician from 1854 to 1859. A short time before his death, without solicitation or request on his part, he was appointed Consulting Physician to the Emigrants' Hospital.

Adding to a great natural aptness for his profession a decided love for its practice, and earnest and thorough in all that he undertook, Dr. Cox acquired an extended reputation as a skillful, conscientious practitioner. In all his intercourse with the world he was guided by a firm Christian faith and resignation, and misfortunes that would have severely tested any but a devotedly religious man wrung from him no murmur or complaint. He died on the 29th of May, of paralysis, after an illness of three weeks' duration.

BOOKS AND JOURNALS RECEIVED.

Shakspeare's Delineations of Insanity, Imbecility and Suicide. By A. O. Kellogg, M. D., Assistant Physician State Lunatic Asylum, Utica, N. Y. New York: Hurd & Houghton. 1866.

Clinical Lectures, by Prof. A. von Graefe, on Amblyopia and Amaurosis and the Extraction of Cataract. Translated by H. Derby, M.D., Surgeon to Massachusetts Charitable Eye and Ear Infirmary, &c., &c. Boston, 1866. From the translator.

Progressive Locomotor Ataxia: its History, Symptomatology, Pathology and Treatment. By Roberts Bartholow, A. M., M. D. Cincinnati, 1866. From the author.

Cholera: its Characteristics, History, Treatment, Geographical Distribution of Different Epidemics, Suitable Sanitary Preventions, &c., &c. By William B. Fletcher, M. D. Cincinnati, 1866. From the author.

The Detroit Review, April, 1866. Detroit.

The Dental Register for January, 1866. Ohio.

The Medical Reporter, St. Louis, April, May and June, 1866.

The Medical News and Library, Philadelphia, January, February, March, April, May and June, 1866.

The Boston Medical and Surgical Journal, January 4, 11, 18, 25; February 1, 8, 15; March 1, 8, 22; April 5, 12, 29; May 3, 10, 17, 24, 31; June 7, 14.

American Literary Gazette and Publishers' Circular, March 1, 15; April 2, 16; June 1, 15, 1866.

Carrol's Literary Register, February 25, March 10, 1866.

The Medical and Surgical Monthly, Memphis, Tennessee, March, 1866.

American Journal of the Medical Sciences, Philadelphia, April, 1866.

The Medical and Surgical Reporter, Philadelphia, January 6, 13, 20, 27; February 3, 10, 17, 24; March 3, 10, 17, 24, 31; April 7, 14, 21, 28, 1866.

Atlanta Medical and Surgical Journal, Atlanta, Ga., April, May and June, 1866.

Chicago Medical Examiner, January, March and June, 1866.

The Medical Record, Vol. 1, Nos. 1, 2, 3, 4, 5, 6, 7, 8. Wood & Co., Publishers, 61 Walker street, N. Y.

The Savannah Journal of Medicine for January, March and June, 1866.

Braithwaite's Retrospect of Practical Medicine and Surgery, American Edition, for January, 1866.

The Cincinnati Lancet and Observer, January, February, March, April, May and June, 1866.

St Louis Medical and Surgical Journal for April, 1866.

The Cincinnati Journal of Medicine for January, February, March, April, May and June, 1866.

The Journal of Materia Medica, by Joseph Bates, M.D., for January, February, March, April, May and June, 1866.

American Journal of Pharmacy, Philadelphia, for January and March, '66.

The Richmond Medical Journal for January, February, April, May and June, 1866.

The Chicago Medical Journal for January, February, March, April, May and June, 1866.

The New York Eclectic Medical Review, Vol. 1, No. 1, 1866.

The Dental Cosmos, June, 1866.

NEW YORK
MEDICAL JOURNAL,

A MONTHLY RECORD OF MEDICINE AND THE COLLATERAL SCIENCES.

AUGUST, 1866.

ORIGINAL COMMUNICATIONS.

What Effect has the Meat or Milk from Diseased Animals upon the Public Health? By Samuel R. Percy, M.D., Professor of Materia Medica in the New York Medical College; Physician to the Jews' Hospital, etc.

(Continued from page 268.)

We must now consider the second division of our subject, viz.: Gaseous, vegetable or mineral poisons absorbed or taken into the system of animals, and so contaminating their flesh or milk as to produce disorders in persons partaking of either.

Milk Sickness; The Trembles.—For many years past a disease has existed, in the newly settled districts of the West, confined to horned cattle, and not in the first degree affecting hogs or sheep. Although this disease has been known for many years and has at times been very prevalent, it has not been determined to what cause we may attribute it. The disease may exist in either an acute or chronic form, but the chronic form is that most frequently met with. In the chronic form of the disease there is frequently an absence of any very marked symptoms, and all that will be noted is that the animal looks dejected; this state will continue, and the animal will be affected with a lingering disease, prolonged sometimes for months, and then causing death on any sudden exertion; or sometimes it leaves the animal in an enfeebled condition for a whole season, from which it recovers slowly, and with a susceptibility to an attack of an acute form of any prevailing disease. The best description I have met with of the post mortem appearances of cattle dead with this disease is that given by Dr. Tolland. "The contents of the third stomach were dry and hard, its mucous membrane dry, and seemed to adhere to the alimentary mass, with which it would come away, though it did not appear to be mortified. The mucous membrane of the small intestines was in some places dry and in others greatly injected with blood; their contents were hardened; they were not distended with gas. The gall bladder was filled with dark, pitchy bile. In some cases the kidneys were nearly black, and appeared to be gangrenous. On opening the carcasses (before putrefaction had commenced) an offensive odor was emitted, not unlike that attendant on a mercurial salivation."

This disease exists only in newly settled districts, and disappears as the country becomes well cultivated. Dr. Drake supposed it to be produced by the cattle feeding on the leaves and tender twigs of the rhus toxicodendron, and his arguments in favor of this plant being the cause of the disease are certainly better founded than any other theory that has been offered.

Dr. Sutton supposes it to be entirely of malarious origin; but that is entirely out of the question, as cattle upon the same farm, kept in a different manner, are entirely free from the disease.

Dr. Seaton supposes it to be caused by "arsenicated pyrites;" but Dr. Owen positively declares that, from experiments he has made, he has never discovered arsenic or any other poisonous metal in the regions where the disease prevails. The disease of which we are here treating is unlike in all its symptoms to poisoning by arsenic.

Dr. Owen attributes the disease to the astringent salts in the waters, such as the chloride of magnesium; but the disease disappears under cultivation of the soil, though the mineral constituents of the waters remain the same; and others who have analyzed the waters say that many of the springs where the disease is the worst contain no chloride of magnesium.

But, whatever may be the cause, the disease, as we before said, exists in both an acute and chronic form. An animal suffering an acute attack has a sickly, dejected and forlorn appearance; it is disinclined to move; it eats but little, if at all; its breath smells badly; the bowels are most generally constipated, and the urine is dark colored and scanty. If an ox in this condition is put into the yoke, it will drop down dead at its work; and if the flesh is eaten by either man or animals, it always produces sickness and frequently death. And yet about the animal there are no post mortem appearances to account for death; in some instances all the morbid changes that have been noticed are a dryness and redness of the mucous coat of the intestines, and a congested state of the kidneys. If a cow in this state is milked, and the milk fed to man or animals, it always produces sickness, and frequently death; and yet there is nothing in the odor, the taste, or chemical or microscopical characteristics of the milk to account for these results. The products of an animal with the chronic form of the disease are equally dangerous, though the animal may not show any very marked symptom of the disorder. But such animals cannot bear violent exertion, so that it is customary before killing an animal to drive it furiously for some time; if it has not the disease it is not injured by this driving, but if it has it generally drops down dead.

The milk, butter or flesh of animals suffering from this sickness, either in the acute or severely chronic form, causes a prostrating sickness if eaten by man, and if he recovers from its first effects he is left in a sickly condition, and will frequently for years, or for the balance of his life, complain that he has never fairly recovered. A very full description of this disease is given by Professor Drake, in the *Western Journal of Medicine and Surgery*, vol. iii.

From all the facts elucidated by those who have studied this disease, it appears to me that it must be attributed to vegetable origin, and possibly to the effects of the rhus toxicodendron, as asserted by Dr. Drake; we will admit that it is peculiar in its character, but that it produces a specific effect.

Thus we have a vegetable poison absorbed into the system of an animal, causing sometimes an acute and at other times a chronic form of disease, and producing morbid changes; and, so long as the disease lasts, producing the same symptoms in man or animals that partake of either the flesh or the secretions. From these effects we may draw deductions of the effects of other vegetable foods which produce less marked effects than those here spoken of—less in degree—seldom inducing immediate death, or even a marked sudden sickness, but causing a lingering malaise that lays the foundation of ill health of both mind and body.

It has been known for many centuries that goats, sheep and horned cattle, and even birds and fish, may eat with impunity to themselves some of the narcotic vegetables, but that at such times both their flesh and milk (of those giving milk) are injurious to man. As I have referred to Dr. Drake's lengthened description of the symptoms of this disease I will give but one case in point, and will confine myself almost exclusively to the words of the observant and intelligent gentleman who related it to me. He said: "I was traveling on horseback, and felt unusually well, when I partook of the flesh of one of these diseased animals, while stopping for dinner in Indiana. After dinner I proceeded on my journey, but in about three hours I was troubled with nausea, followed by a faint, prostrating vomiting, with diarrhœa and cramps in the legs. I stopped, and a physician was immediately sent for, who recognized the disease as 'milk sickness,' with which he was well acquainted and had treated many cases. I ached to the very marrow of my bones, and the vomiting, retching and prostration, which lasted more than a week, so enfeebled me that I could not stand. About this time I had a bed placed in a wagon to take me home, but the journey was a most painful one, as I could not move a hand to help myself without a feeling of faintness. Although under good medical treatment, I lingered in a prostrate and enfeebled condition all winter. My bowels were usually costive, but diarrhœa frequently returned upon me. I could do nothing, either mentally or bodily. In the spring I wandered occasionally out of doors, but could do no work, as the slightest exertion so overcame me that I became faint; and

I am satisfied that had I persisted in my efforts at labor I should have died suddenly, as the ox that is worked while laboring under the same disease dies in the furrow. I gradually got about, but I have never since that sickness recovered my strength."

Ably as Dr. Drake has discussed the probabilities of the *rhus* being the cause of this disease, we cannot but acknowledge that those who doubt the correctness of his opinion have strong ground for so doing, if they may judge by the known action of other vegetable poisons. Most of the poisons with which we are acquainted produce their effects soon after they are taken, and within a few days at the utmost these effects pass off. This is not the case in the disease we are treating of; it is the very reverse of this, as the poison, whatever it may be, lingers in the system of the animal for months, and within all that time produces the peculiar sickness in man, if he partakes of the milk or meat of the diseased animal. We cannot but acknowledge that it is a poison producing different symptoms from any other with which we are acquainted; but we must not reject facts which a man so eminent and earnest as the late Dr. Drake collected by diligent study, because we who have not searched have not met with like instances.

It is asserted by farmers, though I believe it has not been confirmed by physicians, that the "buckeye," the "æsculus ohioensis," produces a similar disease, if eaten by cattle, to that above described, but that neither the flesh nor milk becomes unwholesome to man. From some few observations I have made, I think this is not a proper description of the symptoms produced on cattle which eat this kernel. The buckeye is an astringent narcotic, producing giddiness and symptoms like intoxication, and followed by severe constipation of the bowels. The effects generally pass off in three or four days.

Whatever the poison may be that produces this "milk sickness" or "trembles," it is peculiar in its effects, and from the mass of evidence received it must, I think, be attributed to some vegetable poison, producing a disease similar in degree to some of the animal poisons. We may take the single one of pleuro-pneumonia in cattle, as an instance. Here we have a disease which is mostly chronic in its character, but from numerous well authenticated instances the flesh of such animals, if eaten by man, produces carbuncles, and the diseased animal does not recover its health, and is capable of communicating the infection for many months.

I cannot dwell upon the treatment or post mortem appearances of this disease, my object at present only being to point out some of the diseases in cattle rendering their flesh or secretions injurious or poisonous to man. There are persons who have asserted that the disease here spoken of is not produced by eating diseased meat, but is nothing more than the "continued fever" of the West; but such assertions I deem utterly foolish, and at variance with the recorded facts of able and eminent physicians, at variance with the "mortality tables," and utterly different in its invasion, symptoms, duration and treatment to continued fever. Of the "*foot poison*" I will speak at another time.

I can also but barely mention other vegetable and mineral poisons which may disease the flesh or milk of animals, and render them unfit for food for man. Medicinal agents of various kinds are frequently administered to cattle; we are, to a great extent, utterly ignorant whether they produce deleterious effects upon the flesh. Various parasitic vegetables are found within the organs and muscles of animals; we are but little instructed as to the effects they produce on man if he eats the animal flesh in which they grow.

But there is one cattle disease extraordinarily prevalent around most of our large cities, which, according to well authenticated statements, induces large human mortality, especially amongst the infant population. I speak of what is known as—

The Distillery Poison.—For many years past, wherever distilleries have been erected around large cities a large number of cowsheds have been built adjacent to them, that the cows might consume the distillery waste, and thereby increase their quantity of milk. This traffic has been found highly profitable, and I am informed, by a gentleman who has taken an unusual interest in this subject, that there are at the present time about seven thousand cows fed upon this distillery waste upon that small portion of Long Island immediately adjacent to New York. More than twenty years ago the deleterious quality of the milk from these cows was noted, and strenuous efforts were made by philanthropic individuals to caution the public against its use. This effort has been revived again and again, but in spite of all, the traffic in this diseased milk and meat has largely increased. It is impossible to inform an ignorant public, and legislation alone can reach this plague spot. By reference to authorities I find, amongst other works upon this subject, two reports to the New York Academy of Medicine, which plainly prove, by cases given, the highly deleterious quality of this milk as food for infants. Numerous cases are here given, plainly proving that slow, lingering marasmus and death have been the fate of infants fed upon this milk. By other persons the meat is stated to possess no better properties.

In a report made to the Board of Health of New York, in 1858, an analysis of this distillery waste, the food of these cows, is given by Professor Doremus and Dr. Chilton; and this analysis is most closely scrutinized, and its component parts most plainly shown in comparison with other food, by the author of this essay. in the report to the Academy above mentioned. The author further states, in relation to this distillery poison as food for cattle: "Before distillation takes place fermentation is induced in the grain and its whole character is altered, and the starch and sugar are converted into alcohol, leaving very little of these nutritive products behind. Nor does fermentation stop here, but it is continued after it leaves the still, and even in the state in which it first reaches the animals it is sour, owing to the formation of vinegar by prolonged fermentation; and as it stands before the animals it is constantly growing sourer and assuming another fermentation process, that of putrefactive fermentation, which again creates another and different change in the original character of the grain. We have not, then, in this swill what is usually present in ground corn and other grains; but the grains have undergone vinous, acetous and putrefactive fermentation, making them insufficient to support the life of an animal in a healthy state. Each of these different kinds of fermentation deprives the grains of their nutritive qualities, and the two last make unhealthy additions." Again, this bad food of the cows "changes the quality of the milk, altering it from its normal character, and imparting to it properties that healthy milk does not possess." Numerous analyses are given to prove this fact.

The meat from these swill-fed animals is peculiar in its character. My report is fully corroborated by butchers and others with whom I have conversed upon this subject. All agree in saying that it is unusually soft and flabby; that the fat does not harden readily; that it has a peculiar acid, distillery odor; that it shrinks very much in cooking, and is more tender than other meat. We have very few facts to guide us as to the effects of this meat upon persons eating it, but I have one case in point. In the month of June, 1863, a piece of beef was on my table that had a peculiar flavor. I ate it sparingly, and noticed the peculiar swilly odor and taste, with which I was well acquainted, having acquired this knowledge in student life at Bellevue Hospital, where the fact of supplying us with "swill beef" was not pretended to be concealed. I ate for my lunch bread and this meat only. It produced a most profuse and persistent diarrhœa, with a feeling of general malaise. On the third day after eating it, I was taken suddenly sick while in the street, and my left shin pained me very severely. On my return home, I found an inflamed spot, about three inches in diameter, and in the centre of this two pustular elevations, each about the size and color of a split pea. The next day the whole inflamed surface had become a vesicle. Eventually the whole skin peeled off and the two pustular spots became deep-seated ulcers; six weeks elapsed before they were perfectly healed. The whole spot is yet of a dark color. These distillery cattle are also nearly all afflicted with pleuro-pneumonia.

Third Division—Animal poisons which render the flesh or milk of animals unfit for human food.

Cadaveric Venom.—Some deleterious principle is developed in an infuriated or over-driven animal which renders the flesh dangerous as food, and poisonous if wounds are inflicted while cutting up the carcass. Butchers, in cutting up healthy meat, frequently cut or scratch themselves with the knives, and no evil results follow; but if a wound is inflicted while dressing one of these over-excited animals, symptoms are produced similar to the well known "dissection wound." If the flesh of these animals is eaten, it produces violent dysentery and great febrile excitement. Numerous cases might be cited in proof of these statements. Such flesh is not allowed to be sold in the European markets.

The milk of goaded or infuriated animals is equally deleterious as that from a passionate woman.

The *parturient fever* of animals also renders their flesh utterly unfit for human food; in fact, many deaths are reported in the European journals, well authenticated, as produced from this cause alone. It is acknowledged that in the human female great similarity exists in the cadaveric poison and the puerperal. The secretions of an animal suffering with parturient fever produce almost similar results upon the hand or arm of the accoucheur as that produced by a human female in the same disease. Although the flesh of such animals produces such marked and easily traced sickness, it cannot, when dressed, be distinguished by any known appearances from that from healthy animals. There is a law in England against selling such flesh.

Epizootic pleuro-pneumonia.—This disease has peculiar interest to us, as it is one that has prevailed in some parts of the country to a considerable extent. Few can forget the extent to which it prevailed a few years ago in Massachusetts, and the peculiar malignancy and fatality of the disease. The people became alarmed, and an extra session of the State Legislature was called. Steps were immediately taken to elicit information, and commissioners were appointed by the Commonwealth with full powers to eradicate the disease. The State and the people freely offered their wealth to prevent it from spreading to other States. The whole Union owe a debt of gratitude to Massachusetts for the efforts used and the money spent to prevent the diffusion of this disease. It is much to be regretted that it still exists in isolated localities within the State, and it is more to be regretted that this is due to the timidity of the commissioners, who had full power to exterminate the disease.

The commissioners appointed by the State of Massachusetts visited other States to endeavor to learn something of the disease, and they reported that it existed to a large extent in the distillery dairies around Philadelphia, Bordentown, Brooklyn and Williamsburgh.

It is stated by Professor Gamgee, in England, and by Mr. Charles L. Flint, and all who have studied the disease here, that it never originates spontaneously, either in England or this country, but is always due to importation. It is essentially a contagious disease, so contagious that very few animals escape the disease that take the breath of an infected animal. In the first breaking out of the disease in new districts, by bringing in diseased animals, it is quickly and fearfully fatal, but becomes after a while more chronic in its character. It is a disease of the lungs; spots of various sizes become hepatized and partially encysted; sloughing takes place; the whole lung becomes disorganized, if the animal does not sooner succumb under the influence of the poison.

To form some estimate of the violence and extent of this disease a few facts might be mentioned.

A few years ago a bull, suffering with the chronic form of pleuro-pneumonia, was sent from Holland to the Cape of Good Hope. He infected the animals there with which he came in contact; they spread the disease to other herds, and as all the carrying trade there is done with ox teams, in this manner the disease was carried almost all over the country. The result was that cattle died, not by hundreds or thousands, but by millions, and the business and prosperity of the community was ruined. The disease was only stayed from spreading over a large extent of country by most rigid non-intercourse.

Over a million head of cattle have died in England from pleuro-pneumonia in six years, and Mr. Flint says that the mortality is largely on the increase.

Mr. Charles L. Flint has written a most admirable letter on pleuro-pneumonia to His Excellency Gov. Andrew, of Massachusetts, calling attention to the startling facts he brings forward, and of the continued existence of this disease amongst our cattle. It is acknowledged that it exists in all our large "town dairies." With these facts before me, is there not a necessity of asking the question I have propounded at the beginning of this subject, "*What effect has the meat or milk from diseased animals upon the public health?*"

Mr. Flint, in this letter on pleuro-pneumonia, says: "In one week, about the time I was in London, more than nineteen tons of diseased meat were discovered in that market alone. These are startling facts, but they do not represent the whole truth. They fall far short of it, for we must consider the contamination of the animal food and of the dairy products of the kingdom, and the almost universal demoralization amongst a very large class of farmers, dealers and butchers, affecting the whole community, consequent on the reckless traffic in diseased meat." Again he says: "If the people are willing to drink the milk of cows rotten with disease and to give it to their children, as they have done in Boston; if they are ready to accept the alternative of having the beef of diseased animals brought upon their tables, as has been the case, I have no more to say. But if they desire to avoid this alternative, they will have to act promptly and strenuously for the eradication and stop of pleuro-pneumonia."

"The New Hampshire State Pleuro-Pneumonia Commissioners report that they have found the disease in cattle in Dublin, Nelson, Antrim, Peterboro,' Sharon, Hancock, and Jaffrey; that the number of animals slaughtered by the commissioners is thirty, and their appraised value $386; that the history of the disease in the State is traced back with minuteness to Mr. Chenery's unfortunate importation from Holland, in 1859; and, finally, that the disease is contagious and not epidemic, and that its spread should be carefully restricted by stringent legislative enactment."

Professor Gamgee says: "My opinion is confirmed that the flesh of cattle affected with pleuro-pneumonia, when eaten by man, induces boils and carbuncles to an incredible extent."

"Diseased animal food has affected the health of the people to an extent becoming more and more appreciated the more the subject is investigated."

"The tens of thousands of carcasses of diseased animals, sold in large towns, are stealing life from human beings when and where we least expect it."

"It is altogether a mistake to believe that diseased meat is sold to the poor. There are many diseased cattle eaten whose real state could only be told at the time of slaughter."

"Dr. Livingstone, in his 'Travels in Southern Africa,' asserts that if the flesh of animals which die of pleuro-pneumonia is eaten, it causes carbuncle in the persons who eat it."

In the third detailed report of the Registrar-General of Scotland, in speaking of diseases of the skin and the integumentary system, he says: "The object in noticing this class of diseases at all is to direct attention to the fact that, ever since the outbreak of pleuro-pneumonia among the cattle of this country, carbuncle, a disease formerly very rare, has become comparatively common. Thus in 1848 and 1849 the deaths from carbuncle all over England were only 91 and 81 respectively. Pleuro-pneumonia appeared among cattle the latter end of 1849, and the deaths from carbuncle in the human subject numbered 134 in 1850, 161 in 1851, 233 in 1852, 252 in 1853, 300 in 1854, 255 in 1855, 253 in 1856, 252 in 1857. Many may ask what connection has carbuncle in man with pleuro-pneumonia in cattle? And the question could not be answered satisfactorily were our observations to be limited to what has been observed in this country. But the connection is of the most intimate kind, and proved by evidence which we cannot resist. The Rev. Dr. Livingstone, in his 'Travels in Southern Africa,' mentions the fact that if the flesh of animals which die from pleuro-pneumonia is eaten, it causes carbuncle in the person who eats it. He asserts that neither boiling nor roasting the flesh, nor cooking it in any way, gets rid of the poison which produces this effect; and that these facts have been again and again proved relative to all the tribes of Southern Africa. Who, then, can doubt that this is the very same cause which has produced that large increase in the number of deaths from carbuncle which has been so strikingly manifested in England within the last twelve years? Facts are wanted to show what is the proportion of cases to deaths. Probably not one in twenty is fatal." "Is it not within the bounds of possibility that that new form of disease which we term diphtheria may be partially induced by the use of diseased flesh? The subject, at all events, merits attention."

In a report made to Mr. John Gamgee upon the "Health of

Stock" in England, by Dr. James Rendle, is the following language: "Many diseased animals are slaughtered as human food, and it is said that they are eaten by the convicts of Portland, amongst whom boils and carbuncles are prevalent disorders, amounting, at times, to forty and fifty cases a month, out of one thousand five hundred individuals. Other causes may contribute to the development of these carbuncles, but we know that they constitute the very diseases attributed to the consumption of unwholesome meat."

This strong and emphatic language, used by the Registrar-General in his report to the British Government, fully answers (with this disease) the question I have asked; *it unhesitatingly points to sickness and death as the effect produced by eating diseased meat.* In this, as in other diseases of cattle I have here treated of, there is some peculiar (and as yet to us mysterious) law, which makes us inherit the maladies of those animals whose flesh we convert into our own bodies, and frequently brings us to the same death.

It seems to us that the physicians as well as the people of this country are perfectly apathetic about this disease. It exists amongst us to a very fearful extent, and is liable at any time to extend its ravages, by simple importation, to fresh and healthy neighborhoods. Mr. Flint, in his able letter above quoted, to Governor Andrew, says that the disease still exists in that State to a great extent.

The commissioners appointed by that State acknowledge the same fact. They say, also, that in Bordentown, New Jersey, "the disease had evidently become an *institution*," and that one man had "lost his entire herd of sixty cattle." They say that the same disease exists in all the large town dairies of Philadelphia *and Brooklyn*, and that it has existed there since 1850, annually carrying off large numbers of cattle.

The commissioners use this language regarding the cattle in the Bordentown stables: "In the mean time they (the people) must drink the milk and eat the meat of animals whose inflamed or putrid lungs cannot supply the due and healthy proportion of oxygen to the blood." But it is to be regretted that in a previous sentence they say to the farmers of their own State, "fatten the cattle, if you can, for beef."

With regard to the milk from cows suffering from pleuro-pneumonia, Professor Gamgee says: "It is often in excessive quantity in the incubative stage. When cough and a slightly checked secretion are observed, if an animal is slaughtered, a lung may be found already extensively hepatized. For a few days the milk continues to flow. It is altered in quality, poor, and apt to curdle. It often contains pus and even blood."

In the report to the New York Academy of Medicine, above quoted, I have given a microscopic drawing of the milk from a cow suffering with this disease. It contains pus in large quantities, blood, and peculiar confervoid bodies; and the milk from this cow, from which the analysis was made, was altogether different in its component parts from healthy milk; it was acid, also, to test-paper, when first drawn. Thus we have all authorities whom I have quoted agreeing as to the unwholesomeness and unfitness for food of the meat and milk of animals suffering with this disease. And yet large amounts of both such meat and milk are offered in our markets from all the distillery stables around the city. I pretend to offer no remedy for this great evil; it must suggest itself to every thoughtful mind.

There is a disease amongst cattle in England known as *anthrax* or quarter ill; the same disease exists in sheep, and is then known as braxy. The disease is more severe in Germany, and is there known as *miltzbrand*, and also in France, where it is called *fièvre carbonculaire* It exists, I am told, to some extent in this country, but I have no personal knowledge of it. Very numerous instances of sickness, poisoning and death from using the meat and milk of animals suffering from this disease are on record, as well as death from skinning the carcasses or inflicting wounds while cutting up the meat. But I cannot spare time at present to give details of these interesting cases; it would be but mere compilation.[1]

Eruptive Fevers.—Under this head I can refer at present to but one malady, viz.: Epizootic aphtha, vesicular epizootica, eczema epizootica, murrain, foot and mouth disease, *maul u klauenseuche* of the Germans, *la cocotte* of the French.

[1] For a full description of Anthrax, in all its variety of forms, see Traité des Maladies Charbouneuses, par L. A. Raimbert. Paris: 1859.

The symptoms of murrain in cattle are first indicated by general fever, diminished appetite and disinclination to feed, unwillingness to move, and consequent separation from the rest of the herd. The general fever increases, and an eruption appears, vesicular in its character, chiefly upon the foot between the digits, upon the dental pad extending over the buccal membrane, upon the side and surface of the tongue, sometimes covering that member; frequently the eruption may also be found upon the thighs and upon the inside of the udder; occasionally it is found upon other parts of the body, and extends to the œsophagus, stomach, and intestinal canal. In favorable cases the vesicles disappear in a week or ten days; where they last beyond this time the fever becomes typhoid in its character, and fatal terminations are not unfrequent.

As a general rule this disease affects the same animal but once in a lifetime. The vesicles within the mouth frequently break early, and a large quantity of frothy saliva, mingled with blood, is discharged from the abraded surfaces and the inflamed state of the salivary glands. Lameness is always present, sometimes before the appearance of the vesicles, but always after the vesicles are to be seen. In animals that are giving milk the inflammatory vesicle is frequently found upon the teats, extending up the ducts to the glands, causing structural changes in the udder. When vesicles form within the teats, pus may nearly always be found in the milk. This disease occurs in horned cattle, sheep and pigs, and is generally more fatal to young animals than to older ones.* It is most fatal to the female animal just before parturition.

Of treatment I need say but little. I have seen this disease existing in almost every animal of a large flock of sheep, and under the following treatment it did not prove fatal in a single instance. A long, narrow trough was placed in a narrow place between two fences, where one sheep only could pass at a time. In this trough finely cut straw was placed, which was well wetted with a solution of sulphate of copper. Each animal was compelled to walk through this solution night and morning. The mouth of every animal was inspected, and washed with a sponge on the end of a small, strong stick, moistened with a solution of sulphate of copper. Bran, which had a small quantity of soda mixed in it, was fed every night, and the sheep were kept dry. I briefly mention this to show how much benefit a little treatment may do.

I have seen this disease in its worst form in our town dairies, the animals being exceedingly lame and loth to stand up from the soreness of the feet; the tongue in several instances I have seen extruded and covered with aphthous sores, and large quantities of saliva pouring from the mouth; vesicles which had passed into ulcers existed between the thighs and the udder; vesicles and ulcerated spots (ulcerated in consequence of the abrasion of the vesicles from milking) were numerous upon the teats. The teats were swollen and tumid, and the milk glands enlarged and hardened. I have seen pus in large quantities in milk drawn from these animals, with blood corpuscles, and a peculiar yellow corpusculoid mass, larger than a pus corpuscle, and of a yellow color. I have also seen confervoid bodies in this milk. The French physicians and veterinary surgeons have studied this disease (cocotte) very intimately, and most admirable drawings are given of the appearance of milk from animals badly diseased, in the Transactions of the French Academy of Medicine. Many plates are there given, exhibiting the milk much altered from a healthy state, and showing confervæ, pus, blood, and granulated corpuscles. In the Report to the New York Academy of Medicine, to which I have before alluded, I have given drawings of milk from "an animal covered with sores," similar to that I have just spoken of. This soreness of the feet must not be confounded with that caused by these stump-tail cows standing on the hard floors till their feet are sore and deformed.

The word *murrain* has been used for almost every form of disease existing amongst cattle. Virgil, in his Third Georgic, speaks of a murrain that was most fearfully contagious in its character, that existed about fifty years B. C. But the word murrain should not be used to express this disease of which we are at present treating, unless with the prefix vesicular. It is highly contagious in its character; contagious not only to animals of the same species, but to nearly all domestic animals, *and also to man.* It is contagious to man not only by the serum that exudes from the vesicles, but by the saliva that flows from the mouth, the milk, and, to some extent, the meat.

Dr. Nauheimer published an inaugural dissertation at Giessen, in 1860, on the poisonous nature of milk in epizootic aphtha. He gives a full descriptive history of the complaint, and has collected the reports of innumerable cases of poisoning, producing great sickness and occasionally mortality from use of milk from animals suffering from the disease. I find cases also scattered through our medical and veterinary journals of like results—cases too numerous to mention here, but confirmatory in the strongest manner of the injurious quality of the milk from such animals to human beings and to animals to which it is given.

We have but few recorded facts of the injurious quality of the flesh of such animals for human food. Prof. Gamgee says, on this point: "I think it desirable that attention be paid to this disorder by medical men." Dr. Balfour, of Edinburgh, in speaking of this disease, says: "The whole question of the use of diseased meat for food is one of too great importance and of too vast proportions to be entered on" carelessly.

The flesh of cattle and of sheep affected with small-pox is stated by many persons not to be unhealthy, but is highly condemned by others. Delafond says the sale of it should be condemned. It is not allowed in France and England.

The contagious typhoid fever poison, or rinderpest of Southern Russia, is at present entirely unknown amongst us. It is this disease which at present prevails to such a fearful extent in England. The author of this essay furnished to our able Secretary of State, Mr. Seward, facts proving the contagious nature of this disease, and by Mr. Seward's influence a law has been passed prohibiting the importation of cattle into this country until this plague has disappeared from Eastern Europe.

I can at this time give no information upon this subject, as I have not condensed the numerous extracts I have made from the scientific journals of Europe, but I hope at some future time to condense this subject into a separate monograph.

For the effects of the meat and milk when eaten, I would refer to what has been before said on pleuro-pneumonia.

I have thus skimmed over, in a very hasty manner, some of the diseases to which cattle are subject, and the effects of their meat and milk while in a state of disease upon human beings who consume them. I have necessarily been very brief, and I feel sorry to leave incomplete many interesting points which might have been amplified, and thus have been more interesting and instructive.

I must now consider the whole subject in its general bearings.

It would seem almost an insult to common sense to ask the question: Is it better to protect a whole nation from disease, or cure those who become diseased? And yet almost the whole nation, Senate, Legislators, Board of Health, and the people, answer affirmatively the latter part of this question. Many, very many physicians are no better informed upon the important subjects I have briefly discussed than the people. It is with the hope to bring the whole subject of diseased animal products to the scrutinizing attention of the profession that I have written these few pages. The profession to which I belong need no incentives to urge them to study, for as soon as new fields are opened to them, earnest explorers are diligently searching for new discoveries. The maladies caused by diseased animal products have as yet been but little studied here; but as the attention of the profession is called to the number of diseases existing amongst animals which, in turn, plainly and directly deteriorate the health of the people, we shall have as earnest investigators in this branch of science as in other branches.

Much attention has been given in Europe of late years to the investigation of entozotic diseases, and the researches of Küchenmeister, Röll, Leuckart, Von Sieboldt, Van Beneden, Fleming, Gamgee, and many others, have thrown a flood of light upon this subject. Of the poisonous nature of milk from diseased cows, Nauheimer, Jacob, Hertwig, Donné, Spinola, and a host of others in Europe, and a few in our own country, have given us facts beyond the possibility of controversy. Of the effects of diseased meat upon the public health, Gamgee, Lethely, Taylor, Simon and others, have made it one of the most interesting and important subjects of sanitary science. Leidy, of Philadelphia, has contributed largely to our knowledge of the fauna and flora within living animals. With such a host of investigators, this branch of sanitary science ought to be more deeply studied amongst us. It need not be for want of subjects to which we may direct our investigations. Flint states that pleuro-pneumonia exists to a fearful extent amongst us, and deems the subject of such importance that he calls the attention of the Governor of his State to the facts he lays before him. Drake died after laborious investigation on the subject of "milk sickness," without being able to offer a remedy. The disease still exists to a great extent in many of the newly settled districts of the West. Epizootic aphtha exists through the length and breadth of the land. Fearful scourges of hog cholera frequently carry off thousands of swine in a few days. There are frequent epidemics of the rot in sheep and epizootic disease in lambs, similar to that described by H. S. Randall in 1862. Distillery milk is more largely sold and kills as many children as it did before Leslie's exposures and the author's researches. Tæniæ solium never were so prevalent as now, and trichinæ are known to be an "institution" amongst us! *What is "spotted fever?"*

In studying all these diseases which infest oxen, sheep, swine, and other live stock, we have peculiar facilities for prosecuting our investigations; that great assistance to modern scientific research, experiment, is open to us, and affords us facilities that cannot be obtained in studying diseases in the human subject. Many maladies that are fatal to man can undoubtedly in this way be traced to analogous diseases in animals; and many obscure maladies, the causes of which are now unknown to us, may, in such investigations, find a ready solution. What is more likely to cause disease in us than converting the flesh of animals that we eat into our own bodies, and are we not thus liable to be involved in the same maladies with which they are troubled? There is no field of scientific research which would give a richer harvest than plainly mapping out the effects of epidemic, infectious, contagious and parasitic diseases of animals upon man. A little has already been gleaned in this line, but the harvest has yet to be garnered.

There is one other aspect to this subject which is of vital importance to this nation. I mean the *moral aspect.* No people can be *moral* who deal in any way in diseased animal products; and I do contend that bad food, as well equally as bad air and insufficient light, tend strongly to demoralize the minds of a people. Much might be said upon this aspect of the subject; but I would rather practice to lessen the evil, and leave the preaching to those who can do it better.

I am satisfied that these diseases have not only become better known amongst us, but have increased largely, chiefly by importation, within the last few years.

A remedy is needed for the evils I have here slightly portrayed. Will medical men educate themselves sufficiently upon the subject to know what remedy to ask for?

In treating on the various diseases of cattle that I have noted in this essay, I have often shown the injurious effects of diseased meat and milk upon persons using either of them; a few quotations from other investigators would perhaps be most to the point here.

Professor Gamgee says: "We can refer to violent attacks of dysentery, to malignant pustule, mysterious and fearfully sudden deaths, resulting from the consumption of impure animal food; but we know not to what extent and in what way it aids in constantly raising human mortality, what percentage of deaths must be annually attributed to the constant and unchecked traffic in the carcasses of diseased animals or the milk of foully kept or diseased cows. My conviction is strong that of all food adulterations, none operate so constantly and fatally as the deteriorations of animal products."

"The trade in diseased animals is opposed to our agricultural prosperity; such trade is ruinous to the nation."

"The consumption of diseased animal produce is as humiliating as it is unfortunate." "The traffic in diseased animals favors the development of human diseases."

In a communication read before the British Medical Association Dr. William Budd states, from deep and anxious study upon the subject, "that *malignant pustule* in man is identical with and derived from the fatal and eminently contagious disease which, under the name of '*charbon*' or '*sang*,' has prevailed for a long time on the Continent in oxen, sheep and other animals."

Dr. Budd gives the mode of communication and many cases in point.

M. Guilmot, in *Ann. de Méd. Vétér.*, gives two cases of the transmission of epizootic aphtha to the human species. Dr. Balfour, in the *Edinburgh Medical Journal*, also reports two cases. There are *numerous* cases of like character scattered through the medical and veterinary journals. *Jacob and Hertwig proved it upon themselves.*

Dr. Lethely has reported several cases of poisoning with fresh sausages made from the flesh of diseased cows. In one instance, "out of sixty-six persons partaking of the sausages sixty-four of them were made very ill. They were purged, became sick, giddy, and the vital powers were seriously prostrated, and they lay in many cases for hours in a state of collapse, like people with cholera. One man died." Upon analysis no poison of any kind could be discovered in the meat, but it was known to have been part of a diseased animal. Diseased meat has also been analyzed by Professor Maclagan and Dr. A. S. Taylor without being able to ascertain to what it owed its poisonous properties. Milk that is derived from cows afflicted with epizootic aphtha, splenic apoplexy, the trembles, pleuro-pneumonia, or distillery disease, and which has produced its peculiar sickening effects upon human beings using it, has been found to differ but little in character from healthy milk. What method must we adopt to discover these latent, hidden, but active poisons?

Thus, in reviewing the effect of diseased meat and milk on the public health, we meet with peculiar difficulties in studying the two last divisions of my subject; we cannot as yet prove them all to be injurious except by the effects produced. In the numerous analyses of milk given by myself (*Trans. N. Y. Academy of Medicine*, vol. ii., part 4), amounting to some forty different analyses, I have gone beyond all others in proving that the milk from diseased cows differed in its chemical composition from milk from healthy cows, and that some of the ingredients of healthy milk seemed to be wholly wanting; but this is merely negative testimony, and does not prove the existence of any active poison, although it plainly proves the innutritious qualities of the milk. We do not meet with the same difficulty in studying the first division of my subject—parasitic disease. Here we have something that may be made visible, something that we can prove to be injurious in its effects. We have proved that the "measles" in the pig is the cause of tænia solium in the human subject; that the echinococcus, in its imperfectly developed larval state, destroys thousands of human beings yearly; that a cellulosa in the calf becomes a tænia medio-canellata in the human intestines; that the trichina spiralis of the hog *and of the ox* multiplies in myriads in the stomach of man, and infests every muscle of his body with minute thread-worms, causing great mortality; the "sturdy" in sheep is an hydated form of the tænia cœnurus, and there are instances on record of human poisoning from this cause. There are numerous other parasites, the names of which I have given in the early part of this treatise, of which we know but little of the laws which govern their reproduction, but when they are investigated thoroughly may be found equally injurious to man as those which I have mentioned.

Remarks on Certain Tumors of the Superior Maxilla. By Wm. R. Whitehead, M.D. (Univ. of Paris), formerly Professor of Clinical Medicine in the New York Medical College, etc., etc.

Tumors which occupy the superior maxilla originate so frequently in the antrum that the important anatomical relations of this cavity, and the various modifications in size and form to which it is subject, are interesting objects of study. The superior maxillary bones form the principal part of the osseous structure of the face, and give to the physiognomy of different nations and different individuals of the same family marked differences of features that vary according to the age of the individual. Scarcely developed in infancy, the maxillary sinus acquires a large development in the adult, which is much greater in some persons than in others, and, without increasing the weight of the bone, greatly augments its size.

So large occasionally is this cavity that it is mentioned of a lady who, after the extraction of a tooth, followed by the continued discharge from the antrum of a watery fluid, inserted the flexible part of a quill, stripped of its feathery barbs, to such a distance that, supposing it had entered her brain, she applied to Higmore, who satisfied her by explaining the spiral course it had taken, having entered the distance of six inches and turned upon itself.[1] A similar case is related of a lady at the court of Louis XIV., whose fears were dispelled on consulting Duverney, and the incident caused much sensation, and inspired the courtiers of that monarch with the desire to learn anatomy. Although apparently unimportant, this incident, combined with the rare eloquence and happy facility of Duverney as a lecturer in rendering his demonstrations of anatomy interesting, gave an impetus to its study in France.

Boyer, Giraldès, Stanley and others have admirably described the maxillary sinus, and I shall content myself with merely a mention of some of its relations.

The maxillary antrum is a triangular pyramid; its base corresponds to the nasal fossa; its superior surface forms principally the floor of the orbit; its anterior corresponds to the canine fossa where it is quite thin. The external and rather posterior surface is in relation with the cheek; the inferior or alveolar border is round, and in immediate relation with the roots of the molar teeth, which sometimes penetrate its cavity. The inner wall of the antrum has its aperture narrowed by the vertical plate of the palate bone, by the inferior spongy bone, by the ethmoid and by the petuilary membrane, which, passing through the aperture, penetrates the cavity of the sinus and lines it, so that in the natural state it will just admit the passage of a probe. The sinus is in communication with the nasal fossa, but the aperture is some distance from the inferior part of the inner wall, so that when distended by fluids their escape is rendered difficult. The most rapid distension of the sinus is occasioned by fluids which may form prominent tumors that are sometimes liable to be mistaken for solid growths, and it is on these last that I propose to remark.

[1] Reported in Drake's System of Anat.; Stanley on Diseases of the Bones, p. 215.

Classification of Tumors.—The division of tumors according to their constituent histological elements is eminently scientific and appropriate, being as correctly established as the divisions in natural history. The attempt to classify according to clinical features is perhaps more attractive, and to the surgeon, as the histological elements of tumors become better known, they may be found to coincide more with the anatomical appearances of the morbid tissues and clinical features of diseased growths generally. It is perfectly conformable to the requirements of practical surgery to recognize the division of tumors as established by the terms benign and malignant; they have been long since accepted, and express the requirements of the surgeon; but in accepting these terms it becomes necessary clearly to define their meaning. In the association of the expressions cancerous and malignant, always more or less present to the minds of surgeons, the just value of these expressions is very far from being universally established. The term malignant is generally applied to certain tumors that are characterized by the formation of heterologous tissues, the result of perverted nutrition, and which invariably recur after excision —tumors which implicate neighboring lymphatic ganglions and produce a generalization of the morbid growth manifested by its appearance in other and distant parts of the body, and especially by a peculiar diathesis, which undermines the general health, induces cachexia and finally terminates in death. This term is also sometimes used, but, I maintain, very improperly, to designate other productions, which, though they occasionally reveal a tendency to recurrence either in loco or in distant parts, are unaccompanied, however, by cachexia or general symptoms that are not clearly referable to purely local disturbance. These symptoms are caused by the presence of such growths as the enchondromatous, lipomatous or fibrous tumors in the tissue of the lungs or elsewhere, and which secondarily, by their pressure or displacement of certain organs, induce disorders that break down the general health.

Fibro-plastic tumors have been described as exhibiting peculiar clinical characteristics, that apparently assimilate to those of a general infection of the system or a diathesis; and, under the name of "fibroplastie," M. Woillez[1] reported the history of a remarkable case that would seem to establish the parentage of fibro-plastic to cancerous growths.

The presence of fibro-plastic elements in excess in a tumor may exist conjointly with other elements that impart the characteristics of malignancy. Fibro-plastic tumors are reported by Laurence running the course of cancer, but his descriptions of them show no symptoms of general infection, and those revealed were manifestly occasioned by local causes only.[2]

The enlargement of the neighboring lymphatic ganglions, as a symptom of malignancy, is of great value; yet, very exceptionally, the enlargement of glands in the vicinity, as well as the fortuitous inflammation of the diseased growth itself, may occur without malignancy.

It is synonymously, then, that the terms cancer and malignant tumor should be employed, especially as referring to tumors which not only recur after excision, but which are also distinguished by a peculiar diathesis, not like the tuberculous, but equally fatal. The term cancer, like many other expressions, was, until of late years, singularly perverted, and it is often impossible to recognize in the various descriptions of authors tumors that merit the name of cancer. The supposed resemblances which originated the expressions encephaloid, colloid, fungoid, hæmatodes, scirrhus, and the like, exhibit a primitive effort at classification; a better acquaintance with minute anatomy has enabled surgeons to recognize a number of tumors, presenting the appearance to the unassisted eye of cancerous growths, which are now known not to be malignant, and have been extricated from the interminable confusion resulting from a want of precision in language. If Lebert mistook a modified lymph cell for a type of cancer cell, experience has taught us not to attach too much importance to excessive development, or marked divergence of morbid cells from the type of the lymph cell or cell of connective tissue, unassociated with the clinical features of malignancy.

The attempt to trace the anatomical analogies between malignant and other growths, and render their clinical points of

[1] Arch. Gen. de Méd., 4ème serie, vol. xxix., p. 453. 1852.

[2] Diagnosis of Surgical Cancer, 2d edit. London, 1858.

contact and divergence more apparent, has, by a happy combination of their microscopic characteristics and clinical features, rendered the diagnosis of tumors less obscure and more intelligible. If the intermediate phases in the development of tumors has been appositely compared by Abernethy to the different shades between the primary colors of the spectrum, it is because of the apparent resemblance, to the unassisted eye, of tissues that are now sometimes found to present differences observable upon a knowledge of their ultimate elements, and which direct attention to this diversity of structure. I would not create the impression that these differences of color, form, or consistency correspond always to tumors of different classes; but what I wish to impress is that the anatomical individuality of certain tumors has very properly been determined by the predominance of one or more of the constituent elements which characterize them histologically, and enable us by the aid of the clinical characteristics to draw a more or less accurate line between malignant and benign growths.

A great variety of tumors may occupy the superior maxilla; such as the osseous, fibrous, enchondromatous, cancerous, fibroplastic, vascular, and tumors combining largely two or more different tissues and different elements. The most frequent are the fibrous, osseous, and a variety of tumors improperly named, by Paget, myeloid, and known in France as "tumeurs à myéloplaxes," first pointed out by Robin, and afterwards thoroughly described by Eugène Nélaton.[1]

Osseous Tumors.—There are two distinct varieties of osseous growths that occasionally occupy the superior maxilla; one is the variety that resembles the cancellous structure of bone, and the other is compact and dense, like ivory. According to several authors the microscopic appearances resemble those of medullary tissue and compact substance of true bone. The greater or less density of the osseous tissue in the harder variety is owing rather to the compacted character of the tissue than to any predominance of its earthy or organic components.

Paget thinks that sometimes the hardest osseous tumors are

[1] Une nouvelle espèce de tumeurs bénignes des os, ou tumeurs à myéloplaxes, par Eugène Nélaton. Paris: 1860.

formed by the transformation of cartilage into bone, and he cites in support of this opinion the case of a tumor of the humerous, half of which was compact and hard like ivory, and the other half cartilaginous.[1] The transformation of fibrous tissue into bone sometimes takes place in the superior maxilla. It is well known that the fibrous envelope of the spleen, the fibrous texture of the pericardium, and the anterior longitudinal ligaments of the spine are occasionally transformed into bone; and this tendency to ossific deposit exists generally in the old, but sometimes is a very serious disease in the young. Abernethy relates a case in which the least blow of the soft parts occasioned their ossification.[2] The harder variety or ivory exostosis of the superior maxilla is usually so hard, heavy and close textured, that its specific gravity is much greater than that of any healthy bone; the centre of the tumor, however, may be composed of very close cancellous tissue, though in every other part as dense as ivory; so dense is the texture in the hardest parts, it is stated that there are neither lacunæ nor Haversian canals. These tumors are nodular in form and usually of uniform hardness, without limitation in their growth, and invade neighboring bones. Osseous tumors are not very rare in the superior maxilla. They may occupy a portion of the bone, as the nasal or malar process; or may involve the whole antrum. The troubles resulting from these tumors invading the orbit, nasal cavities and adjacent parts, can readily be conceived; they are, however, slow in their growth, taking many years to attain a considerable size. Usually they are restricted to the antrum, and the apparent concentric thickening of its walls corresponds with a gradual increase of the mass; there exists, also, a very small cavity in the centre, near which the osseous tissue is more cancellous in structure. Cases are reported in which, by necrosis, the tumor has been detached. Paget mentions a case of this kind, where the whole mass of bone filling the antrum was by an eliminative necrosis detached, thus effecting a spontaneous removal of a large portion of the upper jaw.[3]

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[1] Lectures on Surgical Pathology, vol. ii., p. 232.

[2] Cesar's Hawkins' Lectures on Tumors. London Med. Gazette, vol. xxi.

[3] Op. cit., p. 237.

A real osteogenisis takes place in the development of these tumors.

Giraldès, in describing the cancellous variety, asserts that it is formed by an areolar tissue, easily cut, and the meshes of the tissue filled with a reddish substance, analogous to that of the spongy tissue of bone.[1] As regards the consistency, his description corresponds more to another variety of diseased growth of this bone than to the osseous tumor.

The tumor which I removed from the upper jaw of the negro girl, and which case has been already reported in a preceding number of this Journal, presented, on its removal, the appearance of the cancellous structure, but which, by long maceration in alcohol and subsequent exposure to the siccative effects of the air, has, on simple inspection, a very dense and compacted appearance.

Enchondromatous Tumors.—Although cartilaginous growths have been found occupying most of the bones of the body, and by far the most frequent seat being those of the hand, yet it is exceedingly rare to meet with them in the bones of the face. Giraldès asserts never to have met with any example of such tumor occupying the maxillary sinus, but occasionally they are to be met with. Paget speaks of a specimen preserved in the museum of Guy's Hospital, and cites another case in which the growth, composed mostly of cartilage, involved the bones of both superior maxillæ.[2] They are liable to increase rapidly, have a tendency to invade neighboring parts, and though there is nothing certain with regard to their rate of growth, sometimes, however, they take a number of years to acquire a large size. They may present various degrees of consistency, either undergoing ossification and strongly marked as belonging to the class of hard tumors occupying the superior maxilla, or they may, on the contrary, become extremely soft, and are then easily mistaken for other growths of entirely different structure. If a tumor occupying this region presents a well marked noduled appearance exteriorly, is painless, slow in growth and surrounded by healthy tissue, it may not be difficult to recognize it by simple inspection as

[1] Maladies du Sinus Max., Thèse de Concours. Paris, 1851.

[2] Op. cit., vol. ii., p. 195.

being an enchondromatous tumor. Such tumors should be removed at an early period, while readily accessible to surgical treatment. According to Stanley, cartilaginous tumors, when of small size, may be influenced by the application of such local remedies as the preparations of iodine and mercury. He relates the case of a woman received at St. Bartholomew's Hospital, with a round tumor about the size of a hazelnut projecting from the front of the superior maxilla, free from pain, which had been growing many months, and having pierced it with a grooved needle, he states that the sensation attending the passage of the instrument assured him that it was cartilage, with bone dispersed through it. Iodide of potassium and iodine applied to the cheek caused it to disappear partially. At the end of a few weeks the patient left the hospital, and the tumor had diminished to two-thirds its original size.[1] This treatment may very properly be resorted to in similar cases, but it is extremely probable that excision would be finally required to remove such morbid growths.

Fibrous Tumors.—Much more frequent than the preceding tumors that occasionally occupy the superior maxilla is the fibrous tumor. This variety of growth is, perhaps, much more frequently met with involving the maxillary bones than any other bones of the body, and has furnished surgeons frequently the occasion to practice operations on the jaws for its removal. This growth is sometimes developed on the exterior of the bone, springing from the periosteum or the bone itself, and by projecting into the cavity of the mouth is usually quite prominent; the tissue of the gum covers it, and it presents a lobed appearance, and may be mistaken for disease of the gum. The tumor may occupy the antrum, distending its walls, and not so intimately adherent sometimes that it cannot be removed by enucleation. Mr. Laurence, as early as 1837, speaks of having removed a solid tumor from the anterior and lateral part of the upper jaw in this manner, which was probably a fibrous growth.[2] Most frequently the tumor is penetrated by bony projections, and sometimes fragments of the bone, as if broken up, are disseminated throughout the substance of the tumor.

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[1] Stanley on Diseases of the Bones.

[2] Med. Gazette, vol. xxii., p. 154.

Stanley cites the case of a fibrous tumor, originating in an alveolar process, which filled the antrum, and within the tumor a black carious tooth was found imbedded.[1]

Fibrous tumors of the superior maxilla are firm and elastic to the touch, usually oval in form and generally superficially lobed; they are well defined, slow in growth, but may acquire a very large size. O'Shaughnessey removed an immense tumor of this kind by excision of the superior maxilla from a young Hindoo, which was globular, and having on its under surface a deep groove, into which the lower jaw sunk.[2] They are usually painless, and surrounded by healthy tissues; and if they sometimes recur after excision, either in loco or in remote parts of the body, they are not attended by any of those symptoms of cachexia, undermining the general health, which distinguish what should be properly called malignant tumors, for the tendency to reproduction of these, or the enchondromatous tumors in the tissue of the lungs and elsewhere, induces symptoms referable to local disorders and not to poisoning of the blood, as by cancerous disease.

Collis emits the opinion that as these tumors seldom recur after even imperfect operations for their removal, that the few exceptions were more probably fibro-plastic rather than purely fibrous tumors.[3] Their cut surface is generally of uniform whiteness, divided into lobes by fibrous bands; they are heavy and dense, and are not generally composed of that fine, wavy tissue characteristic of the fibrous tumors of the uterus. The fibrous tissue predominates, but in their interior the osseous tissue may be found in the form of minute lamellæ of compact bone.

Fatty Tumors.—Stanley mentions a peculiar degeneration of bone tissue, commencing by the deposit of a yellow substance, usually in the medullary canal of long bones, converting the textures into a greasy substance, soft and crumbling by pressure with the fingers. In the advanced periods of this disease it spreads indefinitely through surrounding tissues, assimilating these to its own nature. Stanley cites a case of this disease

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[1] Op. cit. [2] Chelius. Syst. of Surg. South, vol. ii., p. 999.

[3] Maurice Henry Collis, on Cancer and Tumors Analogous to It, p. 224, London, 1864.

occupying the superior maxillary bone, and the adjacent cellular tissue and absorbent glands became infiltrated with a fatty substance similar to that of the tumor. Mention is also made by Giraldès[1] of a fatty tumor that occupied the maxillary sinus, presented by M. Viard to the Anatomical Society of Paris. The fatty mass had almost entirely taken the place of the bone; it completely filled the sinus, and seemed to have originated in the bony texture, and subsequently to have invaded this cavity. As the microscopic appearances of these cases are not reported, it is quite probable that they belonged to an entirely different variety of tumor, and contained other and important elements besides oil globules.

Myeloplaxic Tumors.—We come now to a variety of morbid growth which was not properly understood until M. Eugène Nélaton, in 1860, made known its characters. It most frequently occupies the superior maxilla, and previously had often been described under different names, and about the nature of which surgeons had committed many errors. Some, as Velpeau, had, from its occasional resemblance to a clot of organized fibrine, supposed it to be that substance. At other times, when the vascular tissue existed in excess, it was called by some surgeons fungus hæmatodes; by others, cancer; and a vast number of other appellations, which were supposed to represent more or less accurately the true nature of the tissue composing it, were employed to designate this variety of tumor.

Robin first discovered the constituent histological element that distinguishes it, and named it "tumeur à myéloplaxes,' from one of the anatomical elements found in the marrow of bones; and, in view of the fact that such productions as the fibrous, lipomatous, enchondromatous and others being thus designated to express the preponderance of these several tissues in certain tumors, there is no impropriety in adopting the suggestion of M. Eugène Nélaton,[2] and apply the name of myeloplaxoma to this variety of tumor, characterized by the predominance of the microscopic element defined by Robin. Long and difficult names are objectionable, but this term is quite as euphonious as lipoma, enchondroma and others that have been fully sanctioned by use.

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[1] Op. cit., p. 40. [2] Op. cit., p. 234.

The constituent elements of the marrow of bones was not properly understood until Robin, in 1849, in a communication addressed to the Society of Biology, at Paris, exposed the true structure of this tissue. Bichat had observed that during fœtal life and in very young age, that in the medullary tissue of bones very little oily matter was found, which exists so much more abundantly in the adult, and increases with the progress of age. This small proportion of oil globules in the marrow of fœtal bones was afterwards discovered to be replaced by an element existing much more abundantly in the bones of the fœtus than in those of the adult, which diminished with the progress of age, though existing more or less abundantly at all ages. This element is the medullary cell proper. Besides the oily globules, the amorphous, finely granular matter, and certain vessels found in the marrow of bones and already observed by anatomists, Robin described two new and distinct anatomical elements: 1st, the multi-nucleated lamellæ, or "myéloplaxes;" 2d, the medullary cells proper, mentioned above. The first of these, or the multi-nucleated lamellæ, are always rare in the healthy marrow of bones, but exist as an accessory element of this tissue at all periods of life. It is this element that constitutes so largely the variety of tumor that at present engages our attention. Robin, in his first communication of the discovery of this element, mentions having observed it in a spina-ventosa of the tibia, and in other tumors which he had occasion to examine. Many tumors described by different authors are evidently principally composed of this element. These tumors are very far from being rare. One of the bones most frequently occupied by this form of growth is the superior maxilla.

On the contrary, tumors composed of the medullary cells proper are very rare, and, according to Robin, they present the appearance of encephaloid tissue, and developing more or less rapidly in the tissue of bones, destroy them, and, protruding, invade the adjoining soft tissues. These tumors, originating in the marrow of bones, offer a certain resemblance to that tissue, and, properly speaking, are the only tumors to which the term myeloid should be applied. Their distinguishing histological element and clinical features differ from the myeloplaxic tumors. Paget, as well as Lebert, supposed that the nuclei of the lamellæ observed in these productions are rudiments of elongated cells, and gives to these last, as characterizing what he terms myeloid tumors, an equal value with the multi-nucleated plates. He has thus unintentionally confounded two different pathological entities under the same name. With him fibro-plastic and myeloid would also seem to be synonymous terms, and he makes no mention of this very rare but well characterized production, to which, as Robin has appositely observed, the term myeloid alone properly belongs.

As an accurate and close observer, he has admirably described the anatomo-pathological appearances of this diseased growth under the inappropriate name of myeloid—appearances such as it presents in the fresh state and before maceration. His descriptions may be considered as referring generally to types of these tumors, and he seems to have applied the term myeloid almost exclusively to them.

This expression should, however, be retained, but applied to tumors characterized by a predominance of the medullary cells proper. They are exceedingly rare, and have never been observed in the superior maxilla. The confusion resulting from confounding myeloplaxic growths with the fibro-plastic productions, because a few elongated cells are observed among their constituent elements, is equally to be regretted.

This is especially a disease of youth, though it may occur exceptionally at an advanced age; it is principally in persons between the ages of fifteen and twenty-five that it is observed. It is generally developed slowly, is painless, and exhibits features that clearly establish its benign character. It may present different degrees of consistency, but its texture is usually firm, but not hard, and has been compared by Paget to the muscular substance of a mammalian heart.[1] It is brittle, easily crushed, and sometimes pulpy, like the tissue of a congested and softened spleen, that crumbles readily under pressure with the fingers. The excess of vascular or fibrous tissue or adipose elements may impart to the pathological specimen variations in color that are quite different; the presence of oil globules in excess may give to it a yellowish tinge that contrasts

[1] Op. cit., vol. ii., p. 214.

singularly with its usual and characteristic crimson hue. It most frequently reveals a preference for the spongy alveolar border of the bone. Often the diseased texture is contained within the maxillary sinus, or a distended and thin shell of bone which, upon pressure, yields a peculiar crepitation. Cavities containing liquid may exist in the substance of the morbid mass, and this peculiar anatomical variety has sometimes been described under the name of cystic tumor of the superior maxilla, although quite different from the fibro-cystic tumors of the maxillary sinus, and of which Cruveilhier relates having observed an example in the post mortem of a woman seventy-eight years of age.[1]

The myeloplaxic tumors should be excised at an early period and completely removed, for if there is the least particle of the disease remaining they will repullulate. After excision, cauterization with the chloride of zinc may sometimes be required. According to Robin,[2] the multi-nucleated lamellæ and multi-nucleated cells or the "myeloplaxes" found in these tumors are sometimes twice as large as in the normal state, presenting a variety of forms, but preserving their original structure. The nuclei fade and are rapidly disintegrated, and disappear after the excision of the tumor containing them, which is also the case with the "myeloplaxes" of the marrow of healthy bones after death. Consequently, the pathological specimens of these tumors should be submitted to microscopic examination within thirty-six or forty-eight hours after their removal.

The nucleated elongated cells or fusiform bodies that Paget mentions as constituting an important element in these tumors, are found in them as in a great number of other tumors, but only as an accessory element. The tumors in which these nucleated elongated cells form the principal and predominant element are what are called fibro-plastic tumors, and what Lebert named fibro-plastic mother-cells are known at the present day to be "myeloplaxes."

Fibro-plastic tumors have a very great tendency to recur after excision, and the "narrow, elongated, caudate and oat-shaped nucleated cells" of Paget, characterizing what he calls the "recurring fibroid tumor," resembles the fibro-plastic

[1] Giraldès. Op. cit., p. 33. [2] Dict. de Nysten. Paris, 1858.

growths of other authors. The fibro-plastic element is transitional to a form of cell giving the impress of malignancy to a class of tumors that fortunately but seldom occupy the superior maxillary bones, and which is known as encephaloid cancer. If this disease is not so frequent in this region as was supposed, it is because a large number of tumors called cancerous have, by a better acquaintance with their anatomo-pathological features, been eliminated from the class of malignant growths.

I have attempted only to remark upon some of the principal points of interest connected with tumors of the superior maxilla, and before terminating my remarks I shall rapidly allude, in a succinct manner, to certain of the operative details required in the removal of these tumors.

In excision of the superior maxilla, either for disease of this bone or for the removal of polypi that are inaccessible without this operation, circumstances must to a very great extent determine the surgeon in the selection of the operative procedure.

The incisions of the cheek may be variously modified, but should conform to the necessities of each particular case. I had long entertained the opinion that in tumors of very large size, a single curved incision, extending from the lip to the malar bone, first recommended and made use of by Velpeau, was preferable to any other. Syme, several years later, apparently claimed this incision and pointed out its advantages.[1] Since I have become acquainted with the recorded success of Ferguson[2] attending his large experience in operations on the upper jaw, my views in relation to this incision have been modified; a single incision of the lip in the mesial line may be all that is frequently required. By dissecting the cheek from the tumor, the great mobility of the parts about the mouth will permit moderate sized tumors to be removed without any external incisions. Cases are reported by Horner[3] and others where this has been effected.

In young subjects sharp bone forceps may be used to advantage, but when the bones are hard and resisting, splintering of

[1] Annales de la Chirurgie, vol. viii., p. 375.

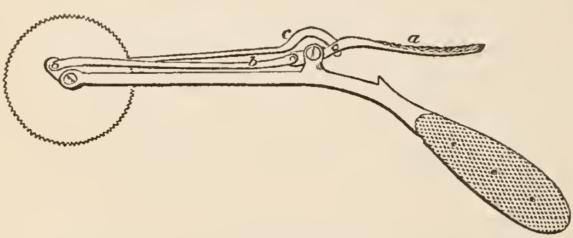
[2] Operations on the Jaws. Braithwait's Retrospect, Part lii., p. 116.

[3] Henry Smith's Operative Surgery. Philadelphia, 1853.

the bone may occur by their use. This may not retard the cure, on account of the extreme vascularity of the tissues about the face, which permits the reparative process in injuries of this region to be accelerated. There are many cases, however, where I would prefer a suitable saw to the different kinds of bone forceps. Flaubert,[1] in speaking of the excision of this bone in a man sixty-six years of age, remarks that though very sharp-cutting forceps were used, the bone was broken rather than cut. The difficulty in the adjustment of the chain saw may retard the operation, though this instrument makes a very neat and smooth incision. I believe it to be unnecessary in this or certain other surgical operations to insist on the advantages of smooth incisions when they can be made.

A saw, invented and manufactured by Mr. Tiemann, and which I have recently seen, apparently possesses the advantage to avoid laceration of the tissues, which sometimes attends the use of Hey's saw or similar instruments, when the cutting movements of the saw are restricted to a very limited space.

The accompanying wood-cut, which Mr. Tiemann has kindly placed at my disposal, and which, he informed me, has never been published, explains the principle upon which this instrument works.



It is composed of two circular saws, placed in apposition, and each moved by a rod like the piston that moves the wheel of an engine. The letters *a*, *b* and *c* in the figure designate respectively the lever and two rods. Movements of the lever cause the alternate movements of the rods and corresponding saws, which describe partial revolutions and in opposite directions. The cutting movements of this double circular saw are confined to a space not exceeding the diameter of the circle

[1] Arch. Gen. de Méd., 3ème série, t. viii., p. 444.

which it represents. It is on the principle of a double lever of the first kind.

In the early days of excision of the superior maxilla, hemorrhage was much dreaded, and the previous ligature of the carotid was thought necessary. Hemorrhage is, however, sometimes troublesome in this operation, but the above procedure has long since been abandoned. It may be effectually controlled by pressure, ligature, or cauterization.

Lectures on the Treatment of Nervous Disorders by the Application of the Constant Galvanic Current. Delivered at the Hospital of La Charité, Paris. By Dr. ROBERT REMAK, Professor Extraordinary of the Medical Faculty, University of Berlin.

[Continued from page 287.]

VI.

I pass now to another series of the excitant effects of the constant galvanic current. This series I call centripetal, because it is necessary in these cases to excite the motor ganglionic cells contained in the spinal cord by means of the sensory fibres which terminate in these cells. Already, in 1856, in an essay read before the Institute, I reported a series of observations made by me on the human subject, both in a state of health and of disease, demonstrating the existence of this excitant action; but it was not till some years afterwards that I was able to satisfactorily prove its application in the treatment of confirmed paraplegia. In a communication published in September, 1860, in the *Comptes Rendus de l'Académie des Sciences*, I described at length those reflex contractions, which it is impossible to reproduce in decapitated or narcotized animals. These contractions will take place in the region of the sciatic nerve when the same nerve of the opposite side is excited by the current. The muscle, which contracts by reflex action, is brought again under the influence of the will. This mode of action of the current, as we might suppose, is particularly apparent in such cases of central paralysis upon the parts below the point of interruption, in accordance with the law ascertained by Marshall Hall—that the intensity of the reflex phenomena are in inverse ratio to the cerebral influence. These reflex phenomena are remarked not only in paraplegia, but also in hemiplegia, and we can understand why, whenever they are present, the prognosis is unfavorable, and that reflex galvanic excitation can give but very limited benefit.

However, exception must be made in favor of several reflex phenomena which I discovered in 1860, and which I have since studied with great care upon a large number of patients. The young man I now present to you—kindly lent me by Dr. Bouillaud, so that I might be able to show you the nature of these last mentioned reflex actions—has been affected for one year with the progressive muscular atrophy of Aran. The disease is already far advanced in the right hand and forearm, while in the opposite arm it hardly exists. It is the interosseous muscles which are chiefly affected. The progress of the atrophy is: 1, the first interosseous, which is reduced to a thin, hard layer, with fibrillary contractions; 2, the long extensor and the long abductor of the thumb (nearly paretic); 3, the flexor of the thumb; 4, the flexor and extensors (except the long supinator) all greatly atrophied, and exhibiting a great depression. The hypothenar muscles are atrophied, and able to contract but slightly, so that the little finger can scarcely be flexed. The function of the atrophied muscles is very insignificant, and there is but very little power to close the hand. Nor can the fingers be extended with any force, nor can they be readily separated from each other; and the middle articulations remain semi-flexed, on account of the weakness of the interosseous and extensor muscles, and the contraction of the great flexor. Whenever the patient desires to use his hand he feels a trembling in the hand and forearm, though this trembling has sensibly diminished during the three days of treatment by galvanism. The awkwardness, uncertainty and weakness of the hands are much less, and he surprised me to-day by showing me several words he had written very legibly, which before he was entirely unable to do. Sensation in the entire right upper extremity, which was nearly abolished, has also returned under this treatment. He is able to separate his fingers to nearly the normal extent, the hand has lost its unhealthy look, and the function of the muscles is reëstablished to a great extent. You will remark that the muscles most atrophied are supplied by different nerve-trunks—the radial, median and ulnar—while other muscles supplied from these same trunks are almost intact. This should lead us to look for the lesion, not in the nerve-trunks, but in one of the nervous centres.

How have we proceeded to produce so sudden an amelioration in a patient regarded till now as incurable? So long as muscular contractility is not totally lost, direct electrization of the paralyzed and atrophied muscles by the induced current is inefficacious, and often even aggravates the symptoms, particularly trembling. In the case before us, the contractility of the implicated muscles is lost on account of their atrophy. The local application of the constant produced no better a result than the induced current. Applied, for example, over the median nerve, it excites visibly the flexor longus, and even the first interossei; but this effect is due to a primary central excitation, about which I shall have more to say presently. By placing a positive ball-electrode upon the right anterior mastoidean fossa under the convex auricle, behind the ascending ramus of the superior maxillary, and a negative electrode, with a larger and flatter surface, upon the left side, at the border of the sixth dorsal vertebra, with a current of from thirty to thirty-six elements, on closing the circuit at the moment of applying the negative electrode on the point indicated, I cause the flexor and extensor muscles of the thumb to contract, and perhaps certain fasciculi of the first interossei. To observe this effect accurately, it is important that you should not touch with the positive electrode the nerves which are distributed to the sterno-cleido-mastoid and to the trapezius, for in so doing you bring on contractions in these muscles which may interfere with the experiment. These reflex contractions—which I call *diplegic*, because to produce them it is necessary to strike two different and distinct muscular points at the same time before they are excited—may also be reproduced if we place the positive pole upon the left mastoid fossa without changing the position of the negative pole. In this ease we see the same phenomena, only they happen in the right hand—the one most affeeted.

These facts are suffieient to prove that we are dealing with an extraordinary pathologieal phenomenon. To enlighten you still more on this subjeet, I will show you another young man whose history I will presently relate. On applying the eurrent to him in the same way, you will notice no eontraction in the muscles of the arm. But let us study more closely, upon the patient affected with progressive atrophy, the nature of these phenomena. We must aseertain that they are not reprodueed by a direetion of the eurrent inverse to that we employed. If, however, sensation in this patient were involved, the reversed eurrent should produce eccentric formications in the affected member. You notice that leaving the negative pole where I first plaeed it, and by varying the position of the positive pole, that the only loeal region whose exeitation will produee reflex eontraetions is the aurieulo-maxillary fossa; that is, the region situated between the ramus of the lower maxillary and the auricle.

Reflecting upon these facts, we anticipate what may be verified by eomparative observations upon other patients—that the superior cervical ganglion of the great sympathetic is the sole point of this species of eentrifugal excitation. On the other hand, if we move the negative pole over the back of the patient, we see that the eontraetions of the muscles of the right hand do not lose to any great degree their intensity, if we deseend towards the lumbar region; but they become weaker as we aseend towards the eervieal region, for there is a horizontal limit or boundary in the neighborhood of the fifth eervical vertebra, and below this line the application of the negative pole will produce no muscular contraetion in the right hand. These effeets are all proved in the case before you.

Allow me now to mention to you the results which I have obtained by experimenting upon a large number of patients similarly affeeted. We must recognize three spinal zones: 1, a superior cervical zone, bounded by four lines, the first circular, and going from the fifth cervical vertebra to the larynx; the seeond and third following the course of the great sympathetic and the carotid to the transverse boundary; and the fourth oblique, beginning at the auriculo-maxillary fossa, and terminating on the petrous bone and occiput, to join a corresponding line on the other side. 2, the superior dorsal zone, beginning at the fifth cervical vertebra, bounded laterally by two lines nearly corresponding to the internal borders of the scapula, and descending as far as the sixth dorsal vertebra. 3, the inferior dorsal zone, extending towards the lumbar region, and reaching as far downwards as the lower extremities.

Such are the conditions under which diplegic contractions take place. In all cases the positive electrode should be placed in the cervical region; as to the negative electrode, it may be applied indifferently to one or the other of the two dorsal regions, or to one only. The entire zone is not always impressionable, any more than one or the other half may be; the zone may become localized in a very narrow space, and sometimes even in a single point. Hence, particularly in inveterate cases where, evidently, the nervous centre has lost much of its excitability, you may have only two points, and those very distant from each other, whose excitation by the two poles can induce diplegic contractions. As you may ascertain upon the patient before us, it is not always the points situated upon the side of the affected limb which are the most impressionable. In these cases a crossed current is often efficacious.

Before seeking to explain these phenomena, we must admit that they are in absolute contradiction to all hitherto known physical and physiological laws. According to these laws, the effect should be in direct proportion to the nearness of the electrodes to each other, whilst in the phenomena we are studying, when both electrodes are placed together upon the cervical region, they are totally inert. The only supposition we can indulge in is that we have, in these cases, a simultaneous excitation of two sympathetic ganglia, one remote from the other. Let me add, also, that, probably, the excitation happens by means of communicating branches which enter into the posterior column of the gray matter of the cord, and anastomose with the ganglionic cellules of the anterior cords, either of the same side or of the opposite side, intermediately by the commissure.

As to the therapeutic effect of this excitation, it is most remarkable. The atrophied muscles which are subjected to the immediate therapeutic influence of the constant current, not only contract by central diplegic excitation, but belly out and regain their lost force.

I have also met with diplegic contractions in the muscles of the hand in arthritica nodosa, a disease in which swelling of the articulations is often combined with atrophy of the interossei. It is, especially in the earlier period of the disease, during the initial febrile state, that very decided contractions are noticeable. In these cases the diplegic application of the current is followed by diminution of pain and articular swelling, increase in the size of the muscles as well as slowing of the pulse, and less heat of the body.

It should be borne in mind, in order that we may not be deceived, that it is not always a return of contractility which leads to a cure, but the continuous and gentle action of the constant current acting upon two points, whose correspondence has been previously ascertained by experiment. This action in time brings on the happiest therapeutic result, if, be it understood, no serious changes already exist in the spinal cord, or in the sympathetic ganglia—changes which have been sometimes shown to exist by post mortem examinations.

As we are here treating only of galvano-therapeutics in general, we cannot go further into the pathological details.

If the diplegic contractions are not very strong, I recommend the administration of the nitrate of strychnine. This salt rapidly increases the excitability of the spinal cord. The induction current never produces these phenomena, and I recommend that you do not continue, in such cases, its use, which may be the means of a good deal of harm.

VII.

In reply to certain inquiries which have been made to me during the course of these lectures, I will repeat that the effects of an interrupted constant current are very different from those produced by the constant current. There are two species of induced current: (1) the induction current of Oersted, which is developed by approaching or withdrawing a magnet from a closed circuit; and (2) the current of Faraday, which is developed on closing the circuit when a neighboring galvanic current begins to flow, or when it ceases. It is the Faradaic current which is in most common use by physicians, and which is usually known under the name of the induction current. If we have a very long connecting wire in the galvanic current, we get, on opening or closing it, a galvanic current, mixed with the induction current, which, according to Faraday, are reproduced because the metallic coil serves at the same time both as conductor and inducer. Induction currents are always instantaneous, and throw into the human body, with great rapidity, a certain amount of electricity. This sudden electric development is inevitable, as Riess has demonstrated, on account of a certain mechanical action, and is, I hold, hurtful to the nervous system, as may be demonstrated by employing induction currents, carefully isolated, in cases of severe nerve-pains. It should be understood that by the term induction current we do not mean either isolated currents or jets of induced electricity, but a more or less complicated series of currents of very limited duration.

When either currents or jets of induced electricity are permitted to act upon the human body, at greater or lesser intervals, we are unable to prolong for any time the duration of the passage of the electric current into the system. Now the contrary is true of the constant current. It allows one to maintain a continuous electric influence as long as may be wished, and the interruption of this current, although it may be mixed with a little induction, finds the molecular state of the nervous fibres so much changed that it gives different results from the simple induction jet, without the previous action of the constant current. By following the experiments of my illustrious co-laborer, M. du Bois-Raymond, we may say that it is absolutely necessary to bring the nerves to an electro-tonic state to secure therapeutic results in the diseases of the nervous system.

VIII.

I have hitherto spoken of progressive muscular atrophy only when it affects the upper extremities; but there are a few instances recorded where, either at the beginning, or subsequently, it attacks the lower extremities. Unfortunately in these cases the prognosis is not generally favorable. However, I have seen some examples of progressive muscular atrophy affecting all the limbs of both the superior and inferior extremities, in which the application of the constant current upon the inferior cervical ganglion of the great sympathetic produced, incontestably, a happy effect.

You will understand that I have made the inquiry whether there are not cases of paraplegia of the lower extremities, unconnected with atrophy, which have not been similarly acted upon by the constant current. I have, in fact, met with cases of paralysis which, beginning in the lower extremities, have gained the upper extremities, and even the cerebral nerves. In these cases of ascending paralysis the effect of the constant current is realized. Here is a young man twenty years old, who came into the wards of M. Velpeau a few days ago. I cannot enter in detail upon the pathological phenomena which this patient offers. They have been carefully taken by MM. Duhamel and Hurlot, and will be published hereafter. I will only say that some three months since he suddenly fainted, and was obliged to be carried home. Fifteen days afterwards he had another fainting fit, which was immediately followed by complete paralysis of both lower limbs, which, under various methods of treatment, did not improve during the past two months. After his fainting fits he suffered from pains in both arms and both legs; these pains have ceased. When I first saw this young man, a few days since, at the Central Bureau, I found that he walked with difficulty; that he could hardly stand upright without aid, and that, when he walked, he dragged his feet, whilst his knees remained perfectly rigid. Standing, he was totally unable to lift his legs, proof of well marked paralysis of the ilii-psoæ muscles. Lying on his back, the contraction of these muscles was more easy. On shutting his eyes, there was no tendency to fall over. Sensation was nearly extinct from the feet to the lower margin of the ribs. The skin of the thighs and legs might be sharply pinched without causing pain. There was no pain either in the extremities or in the vertebral column.

As it was necessary in this case, treated before the committees, to produce a prompt result, I applied the labile constant current of a battery of twenty-five elements, after several previous experiments, upon the nucha, and over the two inferior ganglia of the sympathetic, for about twelve minutes; the effect was immediate, and most surprising. The patient was able directly afterwards, not only to lift his legs when standing, but to get up into a chair by leaning on something; he could walk, and bend his knees, with some awkwardness; and, what is more important, sensation nearly completely returned in his lower extremities. These facts were all verified the next day by a number of medical men who saw the patient the day before. On the same day, before numerous distinguished physicians, I remarked, that I believed that it was to the application of the current upon the inferior ganglia of the great sympathetic that was, in a great measure, due the sudden improvement.

To test the value of this theory, I again applied the current in the region of the inferior ganglion of each side, and after three minutes the patient, without assistance, or leaning upon any thing, jumped up on a chair with great agility. After a third application, he jumped up with his feet together. Since then there has been no pain, no relapse; he is quite cured, and will be discharged from the hospital.

As to the nature of the disease, I believe it was a species of epilepsy with which the patient was affected, and which, by a consecutive constriction of the sanguine vessels at the base of the brain and medulla oblongata, left after it this anæsthetic paraplegia. You understand why the application of the current upon the cervical portion of the great sympathetic was able to cause so quickly the disappearance of the morbid symptoms. In this case, if the constriction had not been rapidly removed, there would have been atrophy of the nervous centres, and, consequently, an absolutely incurable paraplegia.

I should not omit to mention, at this time, that in following an analogous method we are often able to ameliorate, and, sometimes, cure epilepsy itself.

IX.

In the case of paraplegia which was before us the symptoms of ataxia did not exist. You remarked that shutting the eyes produced no effects. But in ataxic paraplegia, which I term *paralepsia*, the effect of the constant current is not less than in simple paraplegia. There exists, however, so many species of paralepsia, that to fully explain the mode of action of the current, it would be necessary to enter into a number of details which I have already published, and to which I refer you.

I will mention here a case of hysterical paralysis in a woman of thirty-six years of age, treated by me in the wards of Dr. Bouillaud. She had been suffering for a long while from prolapsus of the uterus, to such an extent that the neck of the womb was at the entrance of the vagina; at the same time there was well marked paralysis. She was unable to walk beyond a few steps. When she closed her eyes she immediately fell over, and was unable to get up into a chair, even with assistance. The application of the current, repeated several times over the region of the lumbar and solar plexus of each side, produced a rapid and well marked effect. Not only is her walking improved, but she can get up into a chair with aid, and can remain standing with her eyes shut. And what is more curious, and what I predicted, is that the womb has ascended to such an extent that to touch it the whole finger must be introduced into the vagina—evidently the effect of the current upon the muscular fibres of the broad ligaments. Troubles in the circulation, the womb, or ovaries do not contraindicate treatment by the current; on the contrary, the current will be found to be an adjuvant to the ordinary means employed—baths, injections, etc.

I am not able to insist at any length upon the conditions of the galvanic treatment of hemiplegia. I will only say, as the result of my experience, that rigidity, which so often follows cerebral hæmorrhage, can be arrested in its development in direct proportion to its recency. It is necessary in these cases to act less upon the paralyzed and contracted muscles than upon the great sympathetic and the cerebral vessels of the opposite side, with a view of hastening absorption and diminishing the irritation of the hæmorrhagic centre, for this irritation is the cause of the contractures.

As I have proposed to myself to speak here only of such effects of the current as I might be able to demonstrate experimentally, I shall not further pursue the study of paralysis, and I must pass over in silence the anti-spasmodic effects of the constant current, as I have no subjects to show you.

It remains only for me to speak of *traumatic paraplegia*, a case giving me the opportunity of further developing the catalytic effects of the current, and which, so far, I have been able only to touch upon.

Here is a man, twenty-five years of age, a charcoal vender by trade, who, four months and a half ago, fell from the third story of a house, striking the tuberosities of the ischii. There was not only a strong commotion of his whole nervous system, but fracture of the second lumbar vertebra was diagnosed by Professor Velpeau, in whose wards I found the patient. He was placed under my charge on the first of December. He was unable to remain sitting on account of the severe pain he felt in the vertebræ, and there was some deviation from their natural position in the dorsal and lumbar regions. On examination there was quite a depression over the first lumbar vertebra, with a large and painful prominence over the second. The muscles of the abdomen were hard and contracted, whilst the muscles of the lower extremities were relaxed, and atrophied to a great degree. The instep of the right foot was white, œdematous and clammy, and this condition extended to the knee. Voluntary motion was limited to some of the flexors of both legs and some of the extensors of the left foot; all the rest were paralyzed. The abductors and adductors obeyed, if I recollect rightly, very slightly the will. But the flexors of the thigh, the ilii-psoæ and the extensors of both legs were more completely deprived of voluntary motion. The patient could neither lift his legs nor flex the thighs on the pelvis. Sensibility was very obtuse, particularly in the right foot.

At first sight it appeared impossible to do any thing for the man, much less cure him, for it seemed probable that the spinal marrow was seriously injured or compressed by the fractured bone. To solve the question I proceeded in this wise: I applied a current from a battery of fifty-six elements to the surface of the thigh, especially over the cutaneous nerves. The needle of the galvanoscope showed a very considerable deviation; but the patient felt very little pain, and you could not perceive the slightest trace either of reflex movements or of direct muscular contractions. After this trial, I was satisfied that the spinal marrow was not seriously implicated, for, in that case, there would have been reflex movements; and I began to hope that the want of innervation was due to compression of the nerve-trunks in the intervertebral tissues, from tumefaction, and deviation of the dorsal and lumbar vertebræ. I then began to direct the current over the affected vertebræ, with the view, first, of reëstablishing the vertebral column in its natural position, by relaxing the contracting fibres, and strengthening the relaxed fibres of the adjacent dorsal muscles; secondly, to redress the column and relieve the nerve-trunks of the pressure upon them; and, thirdly, to cause dilatation of the sanguine and lymphatic vessels, and thus produce a catalytic effect—that is to say, a reëstablishment of the normal circulation and an absorption of the morbid exudations.

Let me say a word about these catalytic effects. There are several of them. The immediate effect of the current upon the tissues can be demonstrated, even upon the healthy body, by the visible swelling of the muscular fibres, of which we have spoken before. This swelling can be seen even in the muscles of very emaciated frogs. The same immediate effect may be produced upon the epidermis, whose cells become swollen, particularly at the negative pole, and to such a degree that they appear globular under the microscope, and their nuclei become very apparent. Under the same conditions you may see the tumefaction of the dermis giving rise to white prominences, because at the same time the vessels contract; whilst at the other pole, the positive, you will notice a depression of the skin, with deep redness, in other words, dilatation of the blood vessels.

These effects acquire a therapeutic value, when you apply the current upon inflamed and swollen parts. In the case before us we have to deal with the immediate catalytic effects; but what is most important is, that the same effect can be produced by applying the current over the nerves and vessels which are distributed to the inflamed parts. About this I refer you to what has already been said about the soothing effects of the constant current, and I repeat that mediate or indirect catalysis may be used in some cases of inflammation, where direct catalysis would do harm.

You can conceive that, in the present case, with fracture of the vertebral column, direct catalysis acting on the engorged tissues might be used to remove the compression, which interferes with the functions of the spinal column and nerves. The result of the treatment has justified my hopes. After three applications of the current upon the affected parts of the spinal column, the extensors of the left leg regained their contractility and motility. The patient began to extend his leg and to lift it. After three more days he could sit up in bed without being propped, and execute every motion of his left foot and its toes. The vertebral column began to recover its normal position and the muscles of the abdomen to lose their rigidity. Unhappily, the result on the right side has not been as satisfactory. It is true that the swelling of the right leg and foot has disappeared entirely, and the power of the flexors of the leg and of the adductors and flexors of the thigh has increased to the extent of enabling the patient, when lying down, to draw up his foot to the nates, and at the same time to lift it a little; but voluntary motion in the extensors of the foot and toes is still wanting, and especially in the rectus, which is considerably atrophied. I regret that I am unable to continue the treatment, which, I think, gives hope of a favorable issue, and I hope that after my departure it will be continued by the physician in charge.

On Cholera: An Account of its History, Etiology, Pathology, Prophylaxis and Treatment. Prepared by C. C. TERRY, M.D., New York.

(Continued from page 213.)

HISTORY.

In the whole Swedish kingdom the epidemic continued 205 days. During this time 17,327 of the inhabitants were attacked

($4\frac{9}{10}$ per mille), with 8,775 deaths (50 per cent.) (Drasche, p. 72.)

In Norway there was a simultaneous outbreak at Laurvig and Christiania in August (1853), infecting several neighboring coasts and interior cities. In places formerly infected this new invasion caused a high mortality. The duration of this epidemic in Christiania was 123 days, in Moss 115 days, in Drammen 102, in Laurvig 68, in Stavern 47, etc. In many places there were, in the duration of the epidemic, intervals of several days, when the disease almost disappeared, but it again renewed its fury.

The disease remained longest in those districts which were in continual intercourse with infected cities and which had a comparatively dense population. In a district containing 343,500 inhabitants, 3,794 were attacked, with 2,484 deaths.

During this year, also, the United States and Mexico were visited. In the summer the disease existed as an epidemic in Mexico, appearing in July and August in the cities of Vera Cruz and Mexico.

Towards the end of the year, it appeared at New Orleans, and in the following year it continued along the Mississippi.

Of 13,762 emigrants who arrived at New York by twenty-eight ships from England, Holland, France, Hamburg and Bremen, in the month of November (1853), 1,141 died of cholera. The disease was most severe before reaching the American coast.

Among the West India Islands, Nevis, Tortola and St. Thomas were attacked before the end of the year.

At the same time with the existence of this epidemic in Europe and America, the disease commenced in Persia in March, and continued with occasional intervals until the end of the year, and the mortality was excessive. The Persian court fled to the Laar vales near Demavend (6,000 feet above the sea), which had never been infected by cholera.

Being informed that cholera was at Teheran, the Shah, with his numerous followers, went to Sultania in order to organize an army corps for military exercises. The concentration of thirty regiments from various infected places produced an outbreak of the disease. After the cessation of the military movements the Shah returned to the capital with ten infected regiments, and a new outbreak occurred in the city. Intermittent fever was at the same time very prevalent.

In the spring of 1854 cholera appeared at many points in Europe. During the previous winter isolated cases had occurred in France (Paris), but at the end of April a general epidemic appeared in France, radiating from three principal foci, an eastern, western, and southern.

It first broke out in the east at the end of April in the departments of Haute Marne and Marne, from which it spread in various directions to the neighboring departments. While the epidemic was traveling from the eastern focus towards Paris, it united with the line from the west.

Vendée and Deux Lèvres formed the western focus whence the disease spread during July and August over Lower Charente and then northwesterly to Indre-et-Loire, Loire-et-Chèr, Eure-et-Loire and Loiret. The focus in the south was Bouches de Rhône, whence the disease spread to Vaucluse and Var, and northerly to Rhône and Jura, later to Isère Drôme, Upper and Lower Alps, Doubs, and thence to Côte d'Or and Upper Saône, where it united with the eastern line. Westerly (from the southern focus) the disease extended to Herault, Gard (commencement of July), Aveiron, Upper Garonne, Eastern Pyrenees, Aude, Arriège, and Tarn et Garonne, (September.)

The cities in the departments of Vosges enjoyed a peculiar immunity, while the smaller places suffered severely. In the east, the disease raged most severely in the departments of Haute Marne (9.7 per cent. of the inhabitants being attacked), Haute Laône (5.5 per cent.), and Laône, where scarcely a village escaped. In the south the greatest severity of the epidemic fell upon the right banks of the lower Rhône in the departments of Bruchesdu, Rhône, and Vaucluse. The epidemic was mildest in the west, and, in general, it was noticed that the further the disease from the focus, the milder was its type.

During the fourteen months of the duration of the epidemic in France, 125,725 persons died.

In its further extension cholera appeared in the southwest of Italy and in Spain.

In Madrid cholera was officially reported on the 17th of

September, but in the south it had existed for a considerable time in Sevilla and Cadiz.

Although the disease existed in many parts of Spain, attacking both the country and the cities with considerable severity, it did not attain the character of a general epidemic until the following year.

In Italy, this year, it reached an unusual extent, commencing first at the seaports and then extending widely into the interior. The first considerable coast city attacked was Genoa (middle of June). Here, from June 13th to November 6th, 5,318 of the inhabitants were attacked (1 out of every 23) and 2,936 died. Nizza and Turin suffered less severely. In Turin there were 2,477 cases with 1,041 deaths.

In the country the epidemic was very severe, and it continued in some places through the winter.

Savoy, up to this time exempt, was visited by cholera in July. Chambrey, Aix-de-Bains, Montiers, and Annesy were attacked so severely that, in the space of two months, eight out of every thousand inhabitants died.

Sardinia was attacked in August. In Cagliari the mortality was high. In the whole kingdom of Sardinia, this year (1854), there were 45,000 cases of cholera with 24,000 deaths.

From Piedmont the disease extended on the one side to Lower Italy, and on the other to Lombardy; it also extended to the south and east.

Parma and Piacenza were attacked at the commencement of July, but there was a greater proportional mortality than extent; 533 of the inhabitants were attacked, with 338 deaths.

In Tuscany the epidemic was more widely spread—Pisa, Livorno, and Florence being the places most severely affected. The disease reached Rome July 22d and continued until the end of December. 1,668 were attacked, out of which 65 per cent. died.

Naples was attacked just before Rome, and from the end of June to the end of October, 12,641 (1 to 33) were attacked, with 7,436 deaths.

On the island of Sicily the disease raged with a severity scarcely observed outside of India.

In the space of two months 20,000 died of 90,000 inhabitants.

The disease was of a mild character in Palermo (August and September), but Catania suffered severely, one out of every fifteen of the inhabitants being attacked. Taormina and Melazzo also suffered severely. Towards the end of September the disease disappeared from the island, but it continued with considerable severity in Malta.

Easterly from Piedmont the disease extended to Lombardy, but was not severe. In Mailand the first case was a woman who had come from Genoa, which was at the time affected.

The epidemic seems to have commenced with a woman, who had handled clothes which a peddler had brought from some distant place.

During three months the disease in Mailand appeared only as isolated cases, mostly imported; but the epidemic became established in October, disappearing near the end of December. Out of 371 cases during these first three months, 41 were imported, 79 occurred in public hospitals, and in 162 of the remaining cases there was clear evidence of direct communication with persons already affected.

Among the provinces of Lombardy, Pavia was the most severely affected, the mortality of the attacked being 75 per cent., and Como suffered with scarcely less severity. In Lodi there were only 43 attacks and 52 in Cremona. Isolated cases occurred in Brescia and Bergamo, while Londrio and Mantua escaped.

In the whole of Lombardy 3,116 were attacked, and 2,127 died.

In Venetia, Venice was attacked in the fall and the disease remained until April, 1855, then after a short interval reappeared in May, forming a focus from which the greater part of the Austrian monarchy was infected.

Up to this time Switzerland had enjoyed a peculiar immunity, although the canton of Tessin was repeatedly attacked without the disease extending interiorly. But in this year (1854) other parts became infected. In the first part of August the disease appeared in the canton of Aargau, in the city of Aarau. During three weeks, only isolated cases occurred, and then the epidemic was fully established. There were 81 deaths in Aarau. Tessin was attacked at about the same time with Aargau.

In Germany, Bavaria suffered severely; the general flux of visitors from all directions to the industrial exhibition at Munich may have had some part in the production of the disease. By the end of July three cases occurred in Munich, and early in August the epidemic was fully developed. The maximum was August 22d, when 216 were attacked.

The disease lingered until the following April, and during this period 4,834 were attacked, with 2,223 deaths (45 per ct.) Munich formed the focus from which other parts of Germany were infected. Upper Bavaria suffered a larger proportion of sickness than the neighboring districts, there being 4,509 deaths.

In Swabia and Neuburg the disease extended widely, and before the end of the year 1,879 deaths occurred. In the whole of Bavaria, from July 1, 1854, to April 5, 1855, there were 14,874 attacks with 7,370 deaths.

The northern part of Germany remained almost free from cholera during this year; in Berlin only 58 cases occurred, and these were isolated cases at a time when the disease had formerly raged at its maximum intensity.

In the Austrian monarchy Vienna was the only place severely attacked, although numerous isolated cases appeared in some other parts of the monarchy. In the early part of June the first two cases occurred in Vienna. In the commencement isolated cases became frequent, and by the 31st of July the disease assumed an epidemic form. In October the disease rapidly approached its acme, the 21st being the day of maximum intensity, 210 being attacked on that day. By the 5th of November the number of daily attacks were much diminished, and by the 6th of February (1855) the disease had quite disappeared. During the five months from the 1st of August, 5,255 were attacked (one per cent. of the population) with 2,122 deaths.

On the 10th of October the first case was observed in Pesth, and up to the end of December 363 cases occurred. During the fall isolated cases were noticed in Prague, but the disease did not assume an epidemic form until the next year.

At the seat of the war which was carried on this year between Russia and Turkey, the disease developed a destructive epidemic. The immense preparation made in the south of

France, bringing together so many troops, some of whom came from infected districts, may have assisted in giving the disease in the neighborhood of Marseilles a type of such severity.

From Marseilles almost the whole of European and Asiatic Turkey was infected. July 5th, the steamer "Ægyptus" arrived at Gallipoli from Marseilles with a French army corps, and at the same time a French army corps in good health was stationed in Gallipoli. On the passage, ten soldiers died of cholera, and when the troops were landed, forty were still sick. The disease now rapidly spread among the French troops and soon extended to the inhabitants, and at the same time cases were reported at Syra, Smyrna and the Dardanelles, which had almost daily communication with the troops transported from France.

During the whole of July cholera existed in Constantinople among the troops which were transported from the west, both during their passage and after their location in the city. In August cases occurred in all parts of the city, and up to the end of November the number of cases reached 1,800. In the middle of August the Anglo-French army commenced its passage on the coast of the Black Sea. During the passage many soldiers were taken sick. All were landed upon the shore of Bulgaria, and the troops at Varna were soon attacked.

Everywhere along the land and water routes of the troops the disease appeared. With the arrival of the troops in the Crimea, September 15th, the disease was brought to the north coasts of the Black Sea. The disease attacked the Anglo-French fleet and existed also in Sevastopol. When the camps were formed at Balaklava, cholera raged among the troops with extraordinary severity, continuing until the middle of November. From the Crimea the disease extended easterly to Anapa, and further to the Arabian coast, reaching Batum and Trebizond (Riglar). The Asiatic provinces of Turkey were also attacked from the west. Smyrna was infected from Gallipoli, but the disease did not extend far into the interior. Bulgaria, infected from Varna, was more extensively attacked, as were also Rumili and the districts upon the Donau. Soon after the disease appeared in Schimula, Ruschuk, Silestria, then passed over the Donau to Guirgevo and Bukarest. The continual communication of the transport ships and Grecian coast, especially the military occupation of Piræus, produced an extensive spread of the disease upon the islands and the mainland. In June, a number of troops from Marseilles were landed at Piræus. Many of the troops were already sick with the disease when they landed. Up to the end of June cholera was confined to the troops, but on the first of July the epidemic was declared to exist among both foreigners and natives.

On the 4th of July all communication with Piræus was interdicted, the land routes to Athens, however, being open. Shortly after the appearance of cholera at Piræus the disease appeared also among the Egean islands and in Egina.

On the 22d of July the disease appeared at Syra, and soon after at Milsane, Paros, and Antiparos. After the epidemic had considerably abated and in some places disappeared among the Egean islands, Athens was attacked. The disease remained here two months. Communication with Athens was only partially interdicted, the land routes remaining open. Many of the inhabitants fled to various parts of Attica, Megara and Bœotia, carrying the disease with them. Nevertheless, the epidemic was confined to Athens.

While cholera was thus expanding upon the southern countries of Europe, it was no less active in the north and west. The epidemic of the previous year had scarcely disappeared in England when the number of isolated cases began to increase rapidly. During July, August and September, London was overrun, and Scotland also was attacked. During the whole epidemic, from July to December, 3,097 persons died of diarrhœa and 10,785 of cholera. (Drasche, p. 81.)

The density of the population had no considerable influence on the rate of mortality, but the influence of elevation on the severity of the disease was remarked. In some districts the rate of mortality was in inverse ratio to the elevation. The blockade of the Baltic Sea by the combined fleet seems to have assisted the northern extension of the disease; the English ships entered the Baltic with cholera patients on board. In July the disease existed throughout the whole fleet, but it gradually disappeared when the vessels left the infected places and went to sea.

After the occupation of Aland by the troops the disease rapidly spread among the French land forces and extended thence to Sweden, and in the meantime the Russian coast of the Baltic, where troops were also stationed, was attacked. Cholera appeared in Cronstadt on the 5th of July and soon after on the coast of Finland, where communication was frequent with the fleet.

With the commencement of August cholera appeared in Courland and Livonia, then at Petersburg.

In its further extension the disease reached Yaroslave and Oufa.

In Sweden the disease infected the eastern coast, but did not have a considerable extension. Stockholm seems to have received the disease by voyagers from Aland. Isolated cases occurred as early as the 21st of August, but the epidemic was officially declared on the 18th of September, although 250 cases had already happened.

Beyond Stockholm the disease made but little progress, and its course was in nearly the same directions as in the previous epidemic of 1853. Although the disease occurred at a considerable distance beyond Stockholm (at Götheborg) it nowhere assumed the proportions of a considerable epidemic, the total attacks being 3,038, with 1,212 deaths.

The epidemic of 1854 was not confined to Europe; Asia and America were also visited by the disease.

In Persia, as in former years, it appeared in summer, but without causing a considerable mortality. When it appeared at Teheran, the Persian court again fled to the Vale of Laa. The disease did not follow them. Diseased regiments became free from the disease in a few days after arriving in the vale.

In North America cholera spread from New York over the neighboring States to Canada, and from New Orleans along the Mississippi, extending over the Southern and Western States. At many places along the coast German emigrants brought the first cases. Cholera occurred in Mexico at about the same time, the city being attacked in June.

Among the West India Islands, Jamaica, Barbadoes, Antigua, Grenada, St. Lucia and Trinidad were attacked in the spring. In South America the disease appeared repeated in New

Granada, the western coast and the neighborhood of Bogota suffering most.

In 1855 cholera attained a more considerable extension than in the previous year. With the commencement of spring a general outbreak occurred on the Apennine Peninsula, commencing almost simultaneously in Upper and Lower Italy. In the beginning of June the disease appeared at Genoa, in August, at Nizza and several other Piedmontese cities (Tortona, Babbio, Voghera, etc.) Turin was attacked with great severity (one out of every fifty-eight of the inhabitants). In Piedmont, one of every hundred and four was attacked. In July the Island of Sardinia was attacked; in Algheri and Oristano the disease was well marked, while in Lassari the mortality was so high in the middle of August that from two hundred to three hundred died daily.

At the same time cholera existed in Parma and Piacenza, causing 13,533 attacks and 8,118 deaths up to the 8th of November.

Modena escaped the epidemic of the previous year, but was now severely attacked. The first cases occurred in the commencement of July, on the flat lands; later and more numerous cases appeared in Modena, Reggio, Garastalla, Frignano, Garsagnana and Mossa; 11,657 were attacked, with 6,722 deaths.

In Tuscany the epidemic of this year was a continuation of the previous, appearing in February and persisting till the end of July. In Florence, where cholera appeared in the commencement of February, 5,009 were attacked, with 3,006 deaths. Pisa, Livorno, Lucca and the Island of Elba were successively attacked.

With the commencement of October the disease diminished materially, and by the middle of November it had about disappeared. In the whole of Tuscany, 49,618 were attacked, with 25,941 deaths; almost half the fatal cases occurred in August. Bologna was attacked in May, Ferrara in June, Romagna in July. Ravenna, Forli, Faenza and Ancona were also attacked, but less severely. Southerly, in the interior, the disease assumed a mild type.

Cholera appeared in Rome at the commencement of June, the neighborhood of the mouth of the Tiber being the most severely attacked. In December the disease disappeared from Rome.

In the Sicilies isolated cases occurred in the early part of June, the epidemic becoming sooner established on the island. Catania, Syracuse, Palermo and Messina were severely attacked.

In Messina one of every six inhabitants was attacked; in Catania one in every fifteen; and in Palermo one to every thirty-three. In Naples cholera existed as an epidemic in August, attacking one of every thirty-three of the inhabitants.

At the same time with the outbreak of cholera in Lower Italy the disease appeared in Lombardy and Venetia. Venice was the focus from which were infected Venetia, Lombardy and the southwestern part of Austria. The disease extended along the Adriatic coast, and also to Karnthen, Tyrol and Krain.

The epidemic of 1854 in Austria was continued into the following year. In Prague, Pesth, Rzeszow, Galicia, and several places near Venice, isolated cases occurred through the winter of 1854–5.

In the spring the number of cases increased and many more places were attacked. The disease extended so widely that by the commencement of August the whole of Austria was overrun, excepting the dukedom of Salzburg. In Venice, from May to the 27th of August 1,144 were attacked with 677 deaths. In its extension from Venice the disease did not always follow the principal land or sea ways, taking in some cases the most unusual directions. The first cases in Treviso occurred in the commencement of May, and by August all the sects were involved, the number of cases being 9,663, with 4,398 deaths. In Padua, 10,185 cases, 5,392 deaths; Rovigo, 3,505 cases, 1,871 deaths; Udine, 12,266 cases, 5,443 deaths; Balluno, 3,747 cases, 1,764 deaths; Vicenza, 11,583 cases, 5,636 deaths; Verona, 16,039 cases, 8,113 deaths. The disease was equally severe in all Venetia; 72,059 were attacked, with 35,340 deaths, according to the official accounts.

In Lombardy the disease appeared later, there being 64,456 cases, with 34,114 deaths. In both Venetia and Lombardy the country suffered more proportionally than the cities, and the principal routes of the disease were along the high lands.

Cholera extended to Tyrol, appearing in Trient in June; in many of the eastern districts during the following month. In the district of Trient, from June to the commencement of November, there were 14,119 cases, with 6,078 deaths.

In August the disease invaded the northern districts. In South Tyrol there were 15,073 cases, with 6,299 deaths. Along the eastern coast of Italy the disease had a considerable extension. In twenty-two districts, containing 22,521 inhabitants, 1,231 were attacked, with 741 deaths. Cholera appeared at Trieste in June, reaching its acme in July; 4,323 were attacked, with 1,792 deaths in the city; while in the whole district there were 13,420 cases, with 4,722 deaths.

In the city of Vienna two cases of cholera occurred on the 20th of April, and on the 28th of May the third case appeared in a convent in Leopoldstadt, where four additional cases appeared on the 3d and 4th of June. On the 10th of June a local epidemic commenced in a place where a considerable number of deaths occurred in two houses. In a few days the number of cases increased to such an extent that there was no longer any doubt of a general epidemic. Up to the end of June 135 cases had occurred in the city, with 72 deaths; and during the next month the disease increased rapidly, reaching its maximum about the 4th of August. It did not entirely disappear until January (1856). During the whole continuance of the epidemic in Vienna there were 6,685 cases, with 2,943 deaths.

The districts about the March and Taya were overrun by a mild epidemic, and in Upper Austria the disease was limited. Linz was attacked on the 25th of June, and during the three months the epidemic continued there were 913 cases, with 438 deaths.

On the opposite bank of the Danube cholera did not appear until the 30th of July, and then only with a limited extent. At the end of May the disease appeared near Brunn, and at Brunn soon after (June). During four months 1,027 of the inhabitants of Brunn were attacked, and 360 died. On the flatlands of this district 311 sub-districts were attacked, there being (in the entire district of Brunn) 16,392 cases, with 6,140 deaths. In the Znaimar district the total number of attacks was 7,849, with 2,116 fatal cases. In the neighboring districts the proportion of cholera cases was similar. In all Mähren there were 45,808 cases, with 16,620 deaths.

Silesia was infected from Mähren and Galicia. Brelitz was the first place attacked in Silesia (July). Troppan was attacked August 7th. Up to the 16th of September there were 168 cases, with 89 deaths. In all Silesia there were 4,654 cases and 1,914 deaths.

In Bohemia the epidemic was also of a mild character. Cholera appeared at Prague May 20th, where, until the 25th of September, there were 1,991 cases, with 1,085 deaths. The districts neighboring Prague suffered the most severely of the Bohemian districts. In all Bohemia there were 15,347 cases, with 6,779 deaths.

In Galicia the epidemic was more severe than in Silesia, there being 128,213 cases and 52,304 deaths. In the eastern section of Galicia the cases were more numerous, but the rate of mortality was about the same in both.

Cholera appeared in Hungary in the fall of 1854, but there was no general epidemic until the following spring. In Pesth the first case happened April 23d, and the disease disappeared by the 15th of November, after attacking 3,019, with 1,531 deaths.

In Dalmatia the disease appeared in the city of Zara June 27th; thence till the end of September there were 170 attacks, with 103 deaths. In all Dalmatia there were 14,399 cases, with 5,606 deaths.

During the epidemic of 1855, in the whole Austrian monarchy there were 662,814 cases of the disease, with 270,915 deaths.

The disease extended northerly from Austria and overran Prussia. In the commencement of June Thorn and Danzig were attacked, and these places formed the starting points from which the whole country was overrun.

Breslau was attacked at the end of July; the disease disappeared by the 2d of November, after 1,495 attacks. Berlin was attacked on the 1st of August. The epidemic continued eighteen weeks. There were 2,172 cases, with 1,385 deaths.

In Paris the first cases occurred in February, and up to August only 60 cases happened. In August there were 145 cases, in September 348, in October 304, in November 149.

In Marseilles the epidemic became established in August.

Amsterdam was attacked in August, and the epidemic reached its acme in October.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Orthopraxy: The Mechanical Treatment of Deformities, Debilities, and Deficiencies of the Human Frame. A Manual. By HENRY HEATHER BIGG, Assoc. Inst. C. E.; Anatomical Mechanist to the Queen and Prince of Wales, the Royal Hospitals of Chelsea and Greenwich, etc., etc. London: 1865.

The introduction to the work now before us occupies upwards of seventy pages, and consists, first, of an earnest and well considered appeal for the recognition by the profession of the importance, dignity and legitimacy of mechanical therapeutics, both as a science and an art; second, of an interesting *resumé* of the history of the art; and, thirdly, of an argument for the more general employment of gymnastics and localized movements in the prevention as well as the cure of deformities. In speaking under the first head of the "evils of an empirical system of mechanical therapeutics," our author holds the following language, the justice of which will be acknowledged by every physician who has paid conscientious attention to this subject. "Lightness of an instrument is too often sought, even now, at the expense of more important properties. These evils were and are the necessary result of an insufficient knowledge of the lesions to be treated. The scientific mechanist constructs his appliances from an accurate estimate of the character and arrangement of the force needed, and of the strength of material required to meet the object he has in view. Hence he avoids, on the one hand, too great complexity, and on the other a deceptive simplicity of construction. He economizes his material, moreover, in the only manner in which economy can be legitimately carried out, that is, by using so much as may be needed properly to secure the end he would attain, and no more. He thus combines the greatest efficiency with the greatest attainable lightness consistent with efficiency; and the indispensable qualities of the mechanism are not sacrificed to a meretricious parade of manipulation and elegance of finish." "Mechanical therapeutics," he claims, "must be practiced as a separate craft," and in this he undoubtedly states a truth. Slowly but surely the profession are awaking to a realization of this fact. Every family physician feels the need of experts to whom he can refer cases of this kind—cases which demand the devotion of much time, the invention of mechanical appliances and familiarity with their application. It is certain that "this branch of the healing art needs a special training and must be followed as an independent pursuit," in order that the science may be developed to its full capacity for good, and the opprobrium which has so long rested on the profession in this regard be removed. "While it is necessary," he continues, "that the mechanical therapeutist should, on the one hand, undergo a certain amount of surgical education, on the other, he must be taught the mechanic's handicraft."

What this "certain amount of surgical education" is, we are not told. For ourselves, we hold that the education of the mechanical therapeutist should be essentially that of the physician. He must, of course, be familiar with anatomy, both theoretically and practically, with physiology and pathology, and to some extent with general therapeutics. In short, he should be a physician.

The second part of the introduction is an interesting historical sketch of the advances that have been made since the time of Hippocrates in this special branch of medical art, and evinces considerable familiarity with the literature of the subject.

In the last division of the introduction our author strikes at an evil which no physician can contemplate without dismay, and which prevails to a much more alarming extent in our country even than in England. On page 70 he says: "Latterly, the habit of restraining all playful gayety, under the impression that it betrays vulgarity of manner, has been attended with the most serious consequences to the physical development of the rising generation. I firmly believe that the enormous increase in spinal curvature which has taken place during the last twenty years may be traced much more to the imprudence of forbidding 'romps' and other robust exercises of 'childhood taking holiday,' than to any suppositious diminution in the constitutional power of mankind. What is needed for the purpose of counteracting this serious and growing evil is to insist upon the adoption of regulated gymnastic movements during a certain part of the day, accompanied, as far as possible, with free and unrestrained bodily exercise."

The arrangement of the work is extremely methodical. The division into chapters is founded on regional anatomy, the head and neck occupying the first; the upper extremities, the second; the trunk, the third; and the lower extremities, the fourth and last. Each chapter is divided into three heads, corresponding to those of the title, deformities, debilities, deficiencies, while under debilities, in each case, is a subdivision relating to the gymnastics or movements of the region. "Deformities" is allowed to apply only to those malpositions which result from muscular or cicatricial contractions; "Debilities" to those which depend on paralysis or atrophy of the muscles, from whatever cause; while "Deficiencies," of course, covers all losses of substance, whether by amputation or by diseased action.

In speaking of angular cervical curvature our author says: "Mr. Bishop has suggested a very valuable apparatus for angular cervical curvature. It is composed of a light padded plate, accurately moulded to the spine, and having at its upper margin an occipital rest, which possesses free motion horizontally and anteriorly, partial motion posteriorly, but no motion at all laterally. When this apparatus is applied, and firmly secured by shoulder loops, thoracic and pelvic bands, it supports and fixes the cervical portion of the spine, while permitting free motion of the head in every direction but that likely to do harm."

This apparatus we consider cumbersome and ill adapted to the object to be held in view in treating this affection. No attempt is made to relieve the diseased vertebræ from the superincumbent weight of the head, no fear is expressed of the anterior bending of the spine, but lateral motion is carefully guarded against as that which alone is dangerous.

In our view, lateral motion is not dangerous save in those rare cases when the atlas and axis are the seat of disease, but anterior motion is dangerous and distressing to the last degree. In the consideration of the same affection, existing in the dorsal or lumbar region of the spine, we are not more favorably impressed with our author's views. He offers us nothing better than the old fashioned corset, or cuirass, and the lateral crutch acting from a pelvic band against the axilla. "No pressure," he tells us, "can be borne upon the arc of curvature or the immediately adjacent region, and the projection, unless arrested, increases rapidly. . . . . If powerful pressure were employed upon the arc of curvature, a diseased state of the vertebra existing, not only would considerable pain be excited, but all the symptoms accompanying the curvature would be greatly aggravated." Now this is not strictly true. Pressure carefully and judiciously applied cannot only be borne, but is grateful; not only does not exaggerate, but in the vast majority of cases remarkably diminishes the severity of the accompanying symptoms. Hundreds of patients who are now deriving at once comfort and benefit from the use of the appliances devised by Drs. Davis and Taylor, of this city, can bear willing testimony to this fact. Indeed the success which has attended the modes of treatment adopted by these gentlemen has been such as to induce most of our instrument makers to introduce into their apparatus for this affection more of the antero-posterior action and to depend less on the lateral support—which latter, we may remark, is entirely inadequate to produce the results expected from it.

"Deformities," *i. e.*, contractions, affecting the articulations of the extremities, whether upper or lower, are to be overcome by gradual force, the ratchet and pinion being the preferable mode of applying it. The only point of importance which the author suggests in this connection is the necessity for making the axis of the splint, or instrument used for this purpose, coincide with the axis of the joint through which the motion is to take place. In regard, however, to movements of the contracted or paralyzed extremities, his remarks are just and worthy of attentive consideration. On p. 147 he says: "Systematic, passive or active movements, together with kneading and friction, are required in almost all cases of contraction of the various joints, and in paralyzed states of the limbs. By the latter means the nutrition of the muscles is maintained; by the former, their functions and obedience to the will are gradually restored. Even where the entire flexors of a paralyzed limb are more or less contracted from severe irritative lesion of the nervous centres, the contraction may be much ameliorated by a careful use of kneading and *passive movements*." This last sentence we regard as enunciating a truth of the highest importance. To assist the operator in carrying out the movements intelligently, he gives a brief synopsis of the mechanism of the articulations of the upper extremity, which will be found quite valuable for reference. It is difficult, also, to overestimate the importance of the idea contained in the following sentence (p 153): "In carrying out passive movements it is important to induce the patient to attempt to aid the muscular action by voluntary effort. He must endeavor to supplement the extrinsic help by the exercise of his will. It is not sufficient for the operator to place the limb through different movements; the patient's mind, so to speak, must be *coaxed back into the paralyzed limb*." This expression very happily conveys the idea of the gradual re-establishment of the interrupted connection between the brain and the muscle by the oft-repeated exercise of the act of volition.

It is as though each renewed effort carried the nervous force a little further along the conducting nerve, until it finally reached the ultimate fibrillæ and culminated in the long desired action. And whether the movements are given by the hand of an assistant or by means of apparatus, the end should always be kept in view of allowing the patient to suppose that a portion, at least, of the effect which he sees is produced by his own effort. He is thus encouraged to persevere, and the stimulus of a well grounded hope adds to the chances of success.

The most satisfactory portions of the work, to us, are those devoted to lateral curvature of the spine and to talipes. The question of the production of vertebral curves is discussed with great mechanical exactness and ability. The author entirely disagrees with Mr. Wm. Adams in his theory that the spine is held so evenly in equilibrium, by the articulations of the osseous structures, that the muscles acting upon it are simply in a state of "vigilant repose," and we think his exceptions well taken. He says (p. 203): "A more mischievous error I believe could not have been promulgated. It requires us, in considering spinal curvature, to set aside the agents by which alone action is impressed upon the column, and which govern and participate in all its movements, and look upon the latter simply as an elastic, weight-carrying body, liable to be weakened solely by changes within its structures. It is evident that to attempt to solve a mechanical problem, without considering all the data entering into it, is an absurdity."

The causes of true lateral curvature he considers to be, (1) Failure of equilibrium between the resistance of the vertebral column and the weight of the body alone, or over-weighted with burdens; (2) Muscular tractions; (3) Frequent repetitious of an attitude in which the spinal column is curved, and its ultimate results: (1st) Absorption of material on the depressed side; (2d) Retraction of the spinal ligaments and muscles, also on the depressed side; (3d) The formation of a series of two or more curves, antagonizing each other in force and direction, and compensatory of the original abnormal deflection by tending to maintain the head in a perpendicular situation to the feet; and, (4) Retraction and subsequent wasting of the muscles from diminished action within the concavity of the curves." What the general condition of the system is which leads to this "failure of equilibrium" or this irregular "muscular traction" he does not attempt to explain, confining himself exclusively to the mechanical view of the subject.

His plan of treatment is moderate and rational, derived both from his own experience and his observation of the labors and results of others. "Gymnastics," he says, on page 339, "constitute one of the most important means we possess for remedying spinal debility and distortion. Within the past thirty years several attempts have been made to reduce those muscular exercises to a system which have been found most beneficial for the treatment of deformities.

"Foremost among the workers who have sought this end must be named Ling, Roth, Georgii, Chiotso and Heine. In many cases of slight or incipient spinal debility or deformity, gymnastics alone will prove sufficient to rectify the evil; but as a rule, they are found most beneficial when used in combination with mechanical support."

The only point in which we should be inclined to differ with him in his view of this part of his subject, is the relative importance which he assigns to these two means. In our view, the exercise of all the dorsal muscles, but more especially of those most weakened and degenerated, alternating with periods of perfect rest, and combined for a limited time with the employment of force, taking such point of resistance externally to the body as shall tend to unbend the spinal curves, is of more service than the support worn upon the person. From the nature of the case it is extremely difficult to obtain a sufficient leverage acting from a point on the person to accomplish this latter object, and when obtained it must be so severe in cases of very decided deformity as to be scarcely endurable.

The author devotes considerable space to the description of the various appliances which have been proposed for the treatment of this affection, and criticizes them with much ability. The two points on which he insists as essential to the perfection of an instrument, are, first, that it shall act against the arcs of both curves, the original and the compensatory, and secondly, that it shall have two centres of movement, corresponding to the common centre of the two curves and the pelvic centre, or point at which the second curve meets the perpendicular. The instrument which he proposes does not possess this latter feature, in point of fact, but he claims that the resultant antagonism of the forces employed is such that this end is virtually secured. It consists, as usual, of a pelvic band, with lateral uprights and axillary supports. Its peculiarity consists in the arrangement of the back levers, which "spring directly from the pelvic band at an angle which has a definite relation to the magnitude of the lumbar and dorsal curves. Thus placed, their action is not unlike that of the human arm, the padded plate which they carry, and which, when the instrument is in position, rests upon the convexities of the two curves, representing the hands. . . . . A still further modification of the foregoing instrument is the power of rotating, in a horizontal plane, either shoulder. . . . . Hence this apparatus secures the entire series of movements necessary for the treatment of lateral curvatures, viz.: 1st, rectification of the lumbar curve and restoration of the pelvis to its true horizontal plane; 2d, reduction of the dorsal curve; 3d, replacement of the costæ and scapulæ."

Such is the author's estimate of his instrument; but we must await the indorsement of experiment and time before we can give it our unqualified approval. Our own belief is, that no instrument will be perfectly satisfactory in the treatment of this affection which does not have a decided antero-posterior as well as a lateral action, and that the point at which the antero-posterior force should be exerted is the point of greatest rotation of the vertebræ, the pressure being applied to the transverse processes of the projecting side.

The author's system of movements for the spinal muscles is deficient in this respect, that it makes no provision for the exercise of those muscles without the consentaneous exercise of numerous other groups of muscles, in fact, of nearly the whole muscular system. In this way a vast amount of nerve force is wasted, and that in cases where the nerve force is already much below par. The grand aim in all localized movements should be to have every muscle in the body in positive and complete rest except just the groups whose nutrition we are anxious to develop. We are thus enabled to double our results with half the expenditure of power.

In this connection, Mr. Bigg furnishes us four quite elaborate and valuable and certainly very ingeniously contrived tables, with a view to facilitating the study of muscular action on the spine. "The *first table* refers to the action of the different vertebral muscles. The *second table* shows the action of each vertebral muscle in relation to spinal curvature. The *third table* shows the vertebral muscles as distributed to the different regions of the spine. The *fourth table* classifies the muscles particularly implicated in maintaining the arcs of curvature."

These tables, especially the last of them, conclusively show that, to speak collectively of the muscles on the one side or the other of the curve as though they were subject to the same conditions and demanded the same treatment, is most erroneous. The simple truth is this, although the author fails to state and apply it. Certain of the spinal muscles have spinal attachments both at origin and insertion; certain others, at only one of these points. Of the former, some act over long distances, others over very short spaces. Of the latter, some have a directly lateral action on the spinal column, others an oblique or indirect action. Hence it follows that some muscles on the concavity of a curve, usually those which have two spinal attachments, as the *multifidus spinæ* and the *transversales*, will be contracted, while others occupying the same relative position, usually that having but one spinal attachment and acting directly laterally, as the *trapezius* and the two rhomboids, will be put on the stretch; while in the convexity, of course, precisely an opposite state of things will exist. Nor will the same muscle present the same condition with regard to curves in the different spinal regions. The *trachelo-mastoid*, for instance, will be contracted on the convexity of a dorsal, but on concavity of a cervical, curve. To attempt, therefore, to lay down any general rule for the exercise of one side rather than the other, is to commit a grave error. The action of the several groups must be separately studied, and the prescription made accordingly.

We cannot forbear to express our astonishment that Mr. Bigg has not one word to say about the treatment of hip-joint disease in its acute stage. Certainly, if mechanical therapeutics ever had a triumph it was in the beautiful application of the principle of extension to the relief of inflammatory affections of the joints, and notably of the joint referred to, by means of Dr. Davis's splint and its modifications. He gives us a detailed account of apparatus intended to remove the deformity resulting from the ravages of this most painful affection, but of the means of averting this deformity by arresting the disease he appears absolutely ignorant. This cannot be attributed to the jealousy of American invention so common among his countrymen, for we are pleased to see a generous readiness to acknowledge merit on this side the water, and noticeably so in the matter of that exquisite piece of mechanism, the artificial leg of Dr. Douglas Bly, the advantages of which he fully sets forth. It may be that he modestly resigns this troublesome affection to the domain of surgery proper; but if so, we cannot agree with him.

The subject of club-foot is discussed at length, and ably. The author claims to have demonstrated a common centre of distortion in equino-varus, and thus to have done away with the necessity for dividing its treatment into two stages. This general centre he places in the first metatarso-phalangeal joint. The instruments proposed to be worn by him do not differ very essentially from those generally in use, with the exception of that contrived in accordance with the view just stated. The valuable part of his treatment consists in the high estimate put by him on the importance of movements made by means of apparatus in overcoming deformity and restoring natural motion. "Manipulations," he says, page 543, "(or movements with the hands) have long been considered valuable agents in obtaining free movement and muscular exercises; but as the direction and intensity of the force depend upon the skill and experience of the professional adviser, the results are not likely to be so satisfactory as when mechanical powers are substituted, the forces of which can be exactly estimated." But even he fails to appreciate the full importance of these movements in developing the nutrition and functional activity of those muscles, whose paralysis was the first step in the sequence of diseased action which led to the establishment of the deformity, and which, therefore, entitled it originally to be put down rather under the author's caption of Debilities.

In the treatment of paralysis of the lower extremities, by means of apparatus worn, he inclines too much to the use of *elastic* support, which irritates and wearies the paralyzed muscle, while complete and unqualified support affords it an opportunity to recover more readily its lost tone.

This work, from the press of John Churchill, is issued in admirable style, and is profusely illustrated with wood-cuts, which add much to the clearness of the explanations.

REPORTS ON THE PROGRESS OF MEDICINE.

THEORY AND PRACTICE OF MEDICINE.

(Continued from page 316.)

5. *Unilateral Sweating in Epilepsy.* (Medical Times and Gazette, April 7, 1866.)

Dr. Russell recently contributed to this journal an account of a case of epilepsy wherein the tonic contraction of the blood vessels usually supposed to be associated with the epileptic fit was exchanged for one of paralytic distension, so far, at least, as the external blood vessels were concerned. In the following case similar phenomena were observed, but on a far more extended scale. The whole series of phenomena strikingly call to mind the effects which follow division of the roots of the sympathetic nerve on one side of the body.

R. S., æt. 38, a night watchman, applied at the hospital for treatment on account of two epileptiform seizures which had occurred respectively four months and two weeks previously. In the first seizure he was attacked with a sense of burning in his left arm so intense that he supposed his sleeve had caught fire. At the end of an hour the sensation extended to the left side of the face and trunk, and also the lower extremity of the same side, and a profuse perspiration broke out all over the hot parts. He soon lost the power of speech, and at the same time the left side of the face was contracted and his head was drawn down to his shoulder. It is uncertain whether there was any tonic spasm of the muscles of the left arm and leg. He then became unconscious, purple in the face, and rattled in the throat, but did not bite his tongue. The second seizure was of a milder character. He did not lose consciousness, but in all other respects the attack precisely resembled the former one. Subsequent to the first fit the patient frequently experienced a recurrence of the heat and perspiration, as often sometimes as three or four times a day for several days in succession, but confined on every occasion to the left limbs and left side of body and face. At present he may be free from these attacks for several days at a time, and on one or two occasions was so for a fortnight. In these seizures, as the heat reaches the face the left cheek becomes much flushed, speech is slightly affected, and there is a sense of suffocation, with slight amount of lachrymation of the left eye and some dimness of vision. Any marked exertion produces sweating of the left side of the body in abundance. The right side has no share in these phenomena. The patient has improved greatly under an alkaline and tonic course of treatment, with the application of blister to the nape of the neck and strict attention to diet.

In connection with the above case another is given in the same journal from the service of Dr. Ramskill at the National Hospital for Epilepsy and Paralysis. This patient, an epileptic, presented the odd phenomena of sweating on the right side of the face only after any unusual exertion The line of perspiration was abruptly marked at the middle line of the nose and lip, but extended very slightly to the left of the median line on the forehead. On the outer part of the cheek, near the angle, the part supplied by a branch from the cervical plexus, there was no sweating, but the lobe of the ear supplied by a branch from the same plexus was much hotter than that of the opposite side. Local stimuli applied to each cheek in turn produced the same result, viz., profuse perspiration on the right, but none on the left. It is not easy to make out the meaning of this symptom. In some cases it occurs, as Dr. Gairdner has pointed out, with paralysis of the cervical sympathetic from the pressure of an intra-thoracic tumor, which tumor is generally an aneurism. In this instance there was no evidence of any such cause. Moreover, the pupil on the side of the sweating was a little larger than on the other side; whereas, in Dr. Gairdner's case, it was contracted. In Dr. Russell's case the pupils were perfectly normal. At the London Hospital there was, a short time since, under Dr. Andrew Clark's care, a patient who had sweating of one side of the face along with symptoms of thoracic aneurism. In this case the pupil was contracted on the sweating side.

At the same hospital there was also a woman, 35 years of age, who had this symptom well marked, but there was no other discoverable deviation from health. Dr. Anstie, in his work on Narcotics and Stimulants, records a case of sweating on the left side of the face in an epileptic child. In this case the sweating occurred just before the seizures. The child had partial paralysis of this side of the body, which was the one chiefly convulsed in the fits.

Here, as in Dr. Russell's case, the symptoms had definite relations, and therefore are of more value than they usually have. The case shows, Dr. Anstie thinks, that the condition of the nervous apparatus is one of paralysis, rather, than as would be generally held of such a case, of stimulation.

6. *Mode of distinguishing between Nervous Idiopathic Albuminuria and the Albuminuria of Diseased Kidneys.* (Lancet, June 9, 1866.)

The principle upon which M. Corlieu founds the test by which he distinguishes between these two forms is, that when the kidneys are healthy the urine possesses the smell of the odorous substances introduced into the system. He says that if such substances as cubebs, turpentine, etc., be ingested, they will give their characteristic odor to the urine in cases of albuminuria, provided the kidneys be healthy; but if the kidneys be diseased, the odor of these substances cannot be detected, even though they have been previously introduced into the system.

7. *Treatment of Typhus.* (Edinburgh Medical Journal, June, 1866.)

Dr. Edward Long Fox, of Bristol, sums up an able paper on the question, "Where should typhus be treated," with the following conclusions: 1. It is impossible to check the spread of typhus in crowded localities without taking away the patients from their own homes. 2. The admission of such cases to the wards of a general hospital must impair the advantages of such an institution, by necessarily restricting the number of beds it might otherwise contain. 3. No general hospital in the United Kingdom is fitted by its construction for the admission of such cases into wards with other patients. 4. No hospital regulations are possible which could prevent the spread of typhus, if admitted into general wards. 5. The death rate of typhus is lower when such cases are separated than when they are mixed with others. 6. In the former case the tendency to the spread of the disease amongst patients is materially diminished. 7. By treating typhus cases in special fever hospitals, although the danger to officials is very great, yet the danger to the community is much lessened, from the fact that the number of attendants affected, compared with the number of cases treated, is very small. 8. Under certain regulations the danger to nurses in such special hospitals may be lessened. 9. As a conclusion of the whole question, typhus cases are better treated in the general wards of an hospital than at their own homes; better still in separate isolated wards of a general hospital than when mingled with other patients; best of all in a separate institution with an entirely distinct staff of officers. 10. In a separate institution, situated on high ground, with 1,750 cubic feet of air for each patient, a large lateral space between the beds, and good ventilation and drainage, the death rate of typhus, though varying according to the idiosyncrasy of the epidemic, may be considerably diminished.

8. *Coincidence of Eruptive Fevers.* (Lancet, June 9, 1866.)

A case is recorded by Mr. W. B. Kesteven where, in the course of a well developed typhoid fever, with characteristic rose colored spots, the general symptoms and special eruption of measles made their appearance. There were at the time other patients in the same house suffering from measles. The coincident occurrence of two eruptive fevers in the same patient is rare. Mr.

Gallwey published, in the Lancet, in 1858, a case of small-pox supervening on measles and another on scarlatina. Mr. Kesteven, also, in 1856, read before the Epidemiological Society a paper describing a series of cases where measles and scarlatina were concurrent. A case has also recently occurred at St. George's Hospital, in the service of Dr. Barclay, where, on the 21st day of a typhoid fever, fresh and urgent symptoms developed themselves, which proved to be an attack of scarlatina. This in its turn was followed by acute nephritis, to which the patient succumbed. For more than a year previous he had suffered from albuminuria with dropsy.

9. *Febris Nigra*—"*Black Death.*" (Medical Press and Circular, June 13, 1866.)

A singular and apparently hitherto unknown disease has recently made its appearance in the city of Dublin, the cases so far proving uniformly and rapidly fatal. The first case occurred on the 19th of March, and up to the close of May four others had been reported. The subjects attacked were young persons, and apparently in the most perfect health, and the duration of the disease varied from eleven to seventy-two hours. The essential characters of the disease may be gathered from the following comparisons drawn by Dr. Lyons, in his clinical lectures, between it and those diseases to which it presents the most marked resemblances. Technically defined, Dr. Lyons regards the disease as the algid stage of an essential zymotic febrile condition, the nature of which is as yet undetermined.

Comparison with Yellow Fever.—In the depression of the circulation and deep livid discoloration present in both diseases will be at once seen a resemblance sufficiently remarkable between the algid form of yellow fever and the Irish "black death." In the clearness of the intellect and the undisturbed state of the faculties will be found another point of resemblance. On the other hand, in the absence of yellow coloration before or after death in the conjunctivæ or other parts in the cases of "black death," and in the presence of hemorrhages from various parts of the mucous surfaces in yellow fever, as well as the striking concomitant of black vomit, must be noticed very essential points of difference.

Comparison with Cholera.—In contrasting the phenomena of the malady in question with certain of those presented in cholera, Dr. Lyons is of the opinion that even still less pathological affinity can be traced than between yellow fever and black death, or febris nigra, which may form no inappropriate designation of the disease. In the *cholera sicca*, to which alone, in his opinion, the Irish black death can be compared, there is, it is true, an absence of vomiting and purging, and so far a similarity; but the dry cholera is attended with muscular cramps and abdominal pains, and the discoloration of the surface is essentially that of minute venous congestion and not that of cutaneous transudation of blood, and after death muscular rigidity is extreme. In cholera, likewise, the voice is often reduced to a whisper, the eye sunk, the nose pinched, the hands and fingers shrunken, while, with the absence of radial pulse, some of the most remarkable of the cases of "black death" exhibited not only full possession of the faculties, but perfect voice and distinct articulation.

Comparison with Typhus.—On reviewing carefully all the phenomena presented by the cases of black death hitherto observed, Dr. Lyons fails to find any snpport for the opinion which wonld regard them as any form of typhns fever. The insidiousness of the invasion with the early depression of the circnlating system might be considered to establish a faint resemblance; but in the perfect possession of the faculties and distinctness of speech retained to within a short time of the fatal issue by the patients in some of the most marked cases of the black death, will be found characters which point to an essential difference from the typhus state, in which stupor is a leading and necessary feature. Hence Dr. Lyons dismisses the idea that the malady in question is to be ranked nnder any form of typhus, or that it has any true pathological affinity to any phase or stage of that morbid state.

Dr. Lyons is disposed to look at the meteorological condition of the atmosphere for an explanation of the occurrence of these remarkable cases, but no satisfactory conclusion is yet arrived at concerning them. The fatal issue was rapid to a degree not often eqnaled in the most severe epidemics on record, and he is disposed to conclnde that the occurrence of these cases of such unusnal character and uniform fatality points to the possible visitation of some epidemic of appalling severity and no ordinary character.

10. *Treatment of Acute Pneumonia.* (Medical Press and Circular, Jnne 13, 1866.)

In a clinical lecture, at the Mater Misericordiæ Hospital, Dr. Hughes gave, as his opinion, that no peculiar or specific treatment is applicable to all cases of acute pnenmonia, but that the local inflammation in each case subsides concurrently with the fever. He exemplifies his views by two cases in point, in both of which the local mischief was pretty much the same, bnt the accompanying fever was very different, in the one being of a high grade, with pnlse 130, respiration 40, and tongue foul, white furred and thickly coated. In the other the fever was of a lower grade; pulse 80, small and weak; respiration 30, tongue coated with a white, *blankety* fur, and red at the tip. The first case was treated with tartar emetic, the second with moderate stimulants, local connter-irritation being applied in both cases. The recovery was very rapid in both instances. The medical literatnre of the day abounds in recommendations from various anthorities as to the treatment of pnenmonia, each sncceeding one warning his readers against the mistakes of his predecessors and urging the adoption of his special plan. Dr. Hughes sees in this difference of opinion a proof that if we are desirous of obtaining a sure gnide to the snccessfnl treatment of pnenmonia, and other kindred states of the system, we mnst stndy the type of the accompanying fever and adapt our treatment to it, instead of vainly endeavoring to make one plan of treatment fit all cases. He thinks that if the same plan of treatment had been pnrsued in these two cases, there are good grounds for believing that the results would not have been so favorable in both.

11. *The Vis Medicatrix Naturæ in Diseases of Children.* (Medical Press and Circular, Jnne 13, 1866.)

"The wonderful efforts made by Natnre to overcome the disease which has seized upon the system are, perhaps, most striking as witnessed in the fevers of childhood. To watch from day to day the strnggle that is waged—how almost every organ in the body labors to throw off the morbid influences which are operating injuriously on the constitution—how gradually these efforts are attended by success, till through the united and harmonious action of lung and liver, kidney and skin, the blood is once more purified, and the little sufferer passes from the hot frenzy of fever into the cool, calm happiness of health—is a study which is full of interest and instruction.

"In simple, uncomplicated cases of febrile disease we now know that very little in the way of treatment is required, and that, provided the child be placed in favorable sanitary and hygienic conditions, the fever will run its course to a favorable termination. There is no need to trouble the young patient with frequent and nauseous doses of physic, for milk and some simple cooling drink will, in such cases, be all that Nature requires to set things to right.

"Then, again, how many of the nervous affections to which children are liable get better without the administration of drugs?

"We know, for example, that chorea—a disease so generally regarded by parents with great alarm—often disappears entirely if the patient is removed from excitement and undergoes a little moral treatment. We have over and over again seen the spasms and twitchings removed and perfect steadiness regained under the use of the cold douche alone.

"A pneumonia will generally terminate in recovery without blistering or bleeding, if the vital powers be sustained and some gentle stimulus given to the eliminating organs. The truth of this we are glad to see admitted by Dr. West in the last edition of his valuable work on the 'Diseases of Infancy and Childhood,' for in former editions bleeding and antimony were recommended.

"Dr. Dickinson, of London, has shown that albuminous dropsy frequently gets well under full doses of distilled water alone, which appears to act by washing out the kidneys; and we have ourselves pursued this plan in numerous cases of post-scarlatinal dropsy with success.

"We might go on enumerating many other affections which, as a rule, get better without the use of active medicinal agents, but we shall only give another illustration. Some time ago a pale, unhealthy looking boy came under our care, suffering from bronchitis. His breathing was rather hurried, and he had slight cough. Auscultation of the chest revealed large moist rales, and *over the heart a distinct, loud, double friction murmur*, so harsh as to resemble the rubbing together of two pieces of sand-paper. The pulse was quick, but as the boy was not suffering at all, quiet and rest in the recumbent posture were enjoined, and fomentations were applied to the chest. Under this treatment the friction sounds entirely vanished, and the patient in a short time was completely restored. Here were symptoms that were calculated to awake alarm, and would undoubtedly have led to very active treatment had the boy come under the care of most medical men. Yet with the simplest precautions the case terminated in health. What we contend for, therefore, is, that Nature should be more trusted and less interfered with, especially in the treatment of the diseases of early life. It is because of a lack of confidence in her recuperative powers, and a restless desire to be 'doing something,' that practitioners will not become more simple in their dealings with disease. We know that in thus writing we may draw down upon us the disdain of those who will likely regard us as belonging to that class in the profession who would introduce into general practice a 'do-nothing' system. But we hold that it is a very different thing for a medical man to stand by the bedside, an intelligent observer of Nature's operations, ready when he sees she is hard pressed to come to her aid with the appropriate remedy, yet not rudely interfering with her efforts, and to stand by listless and heedless, and doing nothing at all. For in the former case he may, by his well timed help, turn the balance which trembles between death and recovery, while in the latter, the result, whatever it may be, is effected without and in spite of any thing that he has done.

"What we desire to see is a simpler and more philosophic treatment substituted for that blind routine which yet too widely prevails. But this desire we do not hope to have realized till the attention of our students and junior medical practitioners is more closely applied to the study of that large and important class of diseases which are peculiar to the opening years of life. For we believe that it is in this way that clear and accurate views of the immense powers of Nature to resist and overcome disease can best be attained."

VARIA.

We have received a circular from the General Secretary of the Committee formed in Paris, in November of last year, with a view of preparing the organization for an International Medical Congress, to be holden at Paris in connection with the Exhibition of 1867. M. Bouillaud has been chosen President of the Committee; MM. Denonvilliers, Gavarret, Tardieu, Vice-Presidents; M. Jaccoud, General Secretary, and M. E. Vidal, Treasurer The various governmental ministers have extended their sanction and warmest encouragement to the project. and the hope is expressed that, through the support and influence of the medical press, the project may be brought to a successful termination. The plan of procedure will hereafter be announced. All communications relative to the project should be addressed to M. le Docteur Jaccoud, Secretaire du Comitè, 4 Rue Drouot.

We have to acknowledge the receipt of a number of valuable papers, the publication of which is postponed by a press of matter on hand. Among the articles deferred we may mention papers by Drs. J. M. Da Costa, John H. Packard aud Ezra Dyer, of Philadelphia; by Drs. H. R. Storer and B. J. Jeffries, of Boston, and Dr. H. B. Sands, of this city. We have also in the course of preparation an abstract of the lectures of M. Robin, the celebrated histologist, which were delivered at the French School of Histology, and which have never been published in any form. We shall commence their publication at the earliest possible moment.

Dr. Charles H. Stedman, of Boston, died on the 7th of June, aged 61 years, after an illness of only three days. The cause of his death was found, at the autopsy, to be extensive fatty degeneration of the heart, which had produced a rupture of the left ventricle and an extensive effusion into the pericardium. Dr. Stedman was widely known as an experienced and skillful practitioner, and an eminent authority in mental diseases. He had held a number of public appointments, both professional and civic.

Prof. R. D. Mussey, M.D., LL.D., died in Boston, June 21st, at the advanced age of 86 years, after an illness of two years, during the larger part of which time he had been confined to his room. Dr. Mussey was a native of New Hampshire, and one of the most eminent surgeons of New England. He was connected with Dartmouth College, in various medical professorships, from 1814 to 1838. About this latter year he removed to Cincinnati, Ohio, and assumed the Professorship of Surgery in the Miami Medical College, which position he held until his retirement to private life some ten years since. Dr. Mussey was a man of superior ability, and acquired a very extensive surgical practice at the West. He communicated some very valuable papers to the medical journals. Among others may be mentioned one on fracture of neck of the thigh bone within the capsular ligament, which was published in the *American Journal of Medical Sciences.*

Erasmus D. Fenner, M.D., Professor of Theory and Practice in the New Orleans School of Medicine and senior editor of the *Southern Journal of Medical Sciences*, died in New Orleans on the 4th of May, in the 60th year of his age. Dr. Fenner received his degree of Doctor in Medicine at the Pennsylvania University in 1830. In 1840 he established himself in New Orleans, and here for a period of 26 years he labored in his profession with a zeal and devotedness rarely witnessed. In 1844, in connection with Dr. Hester, he established the *New Orleans Medical and Surgical Journal*, which was the first successful Southern journal south of Louisville, Ky. He published, also, two annual volumes—"Fenner's Southern Medical Reports"—a work evincing great ability as well as marked energy and industry. He was also an editor of the *New Orleans Medical News and Hospital Gazette.* In 1866 he was largely instrumental in the organization of the New Orleans School of Medicine, in which institution he was appointed Dean, and held the position until his death. To Dr. F. and his colleagues in this college is due the credit of having first inaugurated the true system of clinical instruction in this country. Dr. F. was a prominent member of the American Medical Association and also of various local societies at the South, and was largely engaged in the public charities of his city. At the time of his death he had just taken measures in re-establishing the college which was closed during the war of the rebellion, and also in starting a new journal (*The Southern Journal of Medical Sciences*), whose first issue, by a curious coincidence, came from the press on the very day of his death.

Henry D. Rogers, LL.D., F.R.S., etc, Regius Professor of Natural History in the University of Glasgow, died at his residence, Elgin Villa, near Glasgow, on the 29th of May. Prof. Rogers was a Philadelphian by birth, and at the early age of 21 held the professorship of Chemistry and Natural Philosophy at Dickinson College, Carlisle, Pa. He was a distinguished geologist and natural historian; his works and papers in these branches of science were numerous and important, and are acknowledged as standard authorities. His great work was The Geology of Pennsylvania, on which he was engaged during many of the most active years of his life. Prof. Rogers is said to have been the only American savant who has ever received the distinguished compliment of a European Professorship.

The vacancy in the Philadelphia College of Pharmacy, occasioned by the resignation of Prof. William Procter, has been filled by the election of Mr. John W. Maisch, late of the New York College of Pharmacy and of the U. S. Army Laboratory.

Dr. David W. Cheever has been appointed Assistant Professor of Anatomy in the Harvard Medical School, Boston, Mass.

Northwestern Dispensary.—This institution has recently purchased a plot of ground on Broadway, between Forty-eighth and Forty-ninth Streets, extending through to Sixth Avenue, at a cost of $18,500. Dr. Stephen W. Roof has been appointed one of the visiting physicians, *vice* Dr. A. D. Hedges, resigned.

Emigrants' Hospital, Ward's Island.—Dr. E. Schilling has been appointed consulting physician to this hospital, to fill the vacancy occasioned by the death of the late H. G. Cox.

The French Emperor has granted 300 medals, 10 in gold, 178 in silver, and 112 in bronze, to those of the medical profession who evinced zeal and devotedness in the care of the sick during the recent epidemic of cholera.

Dr. Thomas Watson is appointed by her Majesty, the Queen of England, a Baronet of the United Kingdom of Great Britain and Ireland. The English medical press evince the warmest satisfaction at this well merited but tardy compliment thus paid to the distinguished President of the Royal College of Physicians.

The post of head surgeon to the Emperor of the French has been assigned to the celebrated M. Nélaton.

At the last meeting of the Paris Academy of Sciences a report, accompanied by two drawings, was read on the subject of a monster, recently born, which had no brain, six fingers on each hand, seven toes on each foot, and other peculiarities. It lived a few hours only.

A prize of fifty thousand francs is offered by the French Government for the discovery of the most important application of the voltaic pile to industrial and scientific purposes. Competition is open to all nations, and the claims will be examined in five years.

The Emperor of France has recently conferred upon Dr. J. Marion Sims the Cross of the Legion of Honor, in acknowledgment of his meritorious services rendered to the great cause of obstetrical surgery. If report speaks the truth, the highest lady in the empire has had the benefit of his professional services.

A case of anthropophagy has recently been before the French tribunals. A young girl of eleven years of age attempted successively the life of her mother and sister for the purpose of drinking their blood. Her extreme youth leads the physicians to hope that a cure may be accomplished.

Sickness in the Prussian and Austrian Armies.—The cholera has made its appearance at Altenburg, a town of Prussia. The right flank of the Prussian Army being in cantonments near to Altenburg, the medical officers have taken all precautions should it spread to the troops. Other diseases are very prevalent in the Prussian Army. One thousand sick soldiers have already been sent back to Berlin, and it is stated that illness reduces the effective men one per cent. a day. Typhus has made its appearance in the Austrian Army.—*Lancet.*

Medical War Preparations in Italy.—The Medical Staff of the Italian Army is now in process of organization. The convents will be very generally used as hospitals. In Milan, 750 nurses are inscribed for hospital service, including the names of many ladies of good families; and Sisters of Mercy have already been sent to Piacenza to perform the duties of nurses. Miss Nightingale, in a letter which she has just addressed to an Italian gentleman, speaks most highly of the Italian hospital organization during the Crimean War.—*Lancet.*

A German physician is publishing a series of letters in the Augsburg Gazette, affirming that there exists at the present moment in Germany such germs of disease that if war should break out it would inevitably lead, in consequence of the conglomeration of large masses of men, to the most terrible epidemic of cholera ever witnessed.—*Lancet.*

BOOKS AND JOURNALS RECEIVED.

Medical Electricity; embracing Electro-Physiology and Electricity as a Therapeutic Agent, with special reference to Practical Medicine; showing the most approved apparatus, methods and rules for the Medical Use of Electricity in the Treatment of Nervous Diseases. By Alfred C. Garratt, M.D., Fellow of the Mass. Med. Society, etc., etc. Philadelphia: J. B. Lippincott & Co. 1866: pp. 1103.

On the Geneva Convention of August 22d, 1864; with some Account of the National Committees formed for Aiding in Ameliorating the Condition of the Sick and Wounded of Armies in Time of War. By Deputy-General T. Longmore, Professor of Military Surgery in the Army Medical School. From the author.

The London Lancet, June 2, 9, 16, 23, and 30, 1866.

The British Medical Journal, June 9, 23 and 30.

The Medical Times and Gazette. London, June 9, 16, 23 and 30, 1866.

The Medical Press and Circular. London, June 6, 13 and 20.

The American Journal of Medical Sciences. Philadelphia, July, 1866.

The Detroit Review of Medicine and Pharmacy, for July, 1866.

The New Orleans Medical and Surgical Journal, Vol. 19, No. 1.

The Nashville Journal of Medicine and Surgery. New series, No. 1, for July, 1866.

The Ophthalmic Review. London, for January and April, 1866.

The Edinburgh Medical Journal, for February, March, April and May, 1866.

The Medical Mirror. London, for January, February and March, 1866.

The Journal of Practical Medicine and Surgery. London, January, February, March, April and May, 1866.

The British and Foreign Medico-Chirurgical Review, for January and April, 1866.

The Dublin Quarterly Journal of Medical Sciences, for May, 1866.

The Social Science Review, for January, February, March and April, 1866.

The Glasgow Medical Journal, for January, 1866.

The Canada Medical Journal, March, May and July, 1866.

Medical Reporter. St. Louis, June 15 and July 1, 1866.

Cincinnati Lancet and Observer, July, 1866.

Savannah Journal of Medicine, June, 1866.

American Journal of Pharmacy, July, 1866.

American Literary Gazette and Publishers' Circular, July 2, 1866.

The Journal of Materia Medica, July, 1866.

The Dental Cosmos. Philadelphia, June and July, 1866.

The Atlanta Medical and Surgical Journal, July, 1866.

The Pacific Medical and Surgical Journal, June, 1866.

The Medical and Surgical Reporter. Philadelphia, June 16 and 23, 1866.

The New Orleans Medical Record, Vol. 1, Nos. 1, 2 and 3, for May and June, 1866.

The Herald of Health. New York, July, 1866.

The Medical Record. New York, Nos. 7 and 8.

The Detroit Review of Medicine and Pharmacy, June, 1866.

The Boston Medical and Surgical Journal, June 21 and 28 and July 5 and 12, 1866.

The Medical Record. New York, July 2 and 16, 1866.

The Cincinnati Journal of Medicine, July, 1866.

NEW YORK

MEDICAL JOURNAL,

A MONTHLY RECORD OF MEDICINE AND THE COLLATERAL SCIENCES.

SEPTEMBER, 1866.

ORIGINAL COMMUNICATIONS.

On Inhalations in the Treatment of Diseases of the Respiratory Passages, particularly as Effected by the Use of Atomized Fluids. By J. M. Da Costa, M.D., Physician to the Pennsylvania Hospital.

During my term of service at the Pennsylvania Hospital, as well as prior in private practice, I have made frequent and constant use of inhalations in the treatment, especially, of laryngeal and pulmonary affections. Some of the results thus obtained were communicated to the class attending the clinical lectures, as, indeed, many of the cases were seen by them. But as these results were chiefly gained by a plan of comparatively recent origin, that of atomization, and one the value of which can only be settled by the conjoined labor of many, I have thought, whether rightly or wrongly, that they might be of interest to a larger circle than those that witnessed them, and contribute something towards the knowledge of the profession on the subject. Let me further premise, that a number of the cases which will serve as the basis of much that will be said in this paper, especially those under my charge at the hospital, received no other treatment, and thus I sought to avoid that stumbling-block in therapeutic reasoning which often interferes so sadly with our efforts to arrive at definite conclusions.

The attempt to use inhalations in the treatment of disease is, as is well known, not of recent origin. Hippocrates not only employed them, but describes an apparatus for the purpose, and with Galen they were a favorite mode of treatment. Indeed, with all Roman physicians they became so; and both by the physicians of antiquity and later by the Arabs the inhalation of sulphurous vapors in bronchial affections, and of arsenical vapors in asthma, were constantly advised—the latter a prescription which, in our own times, has been revived by Trousseau. Hot, dry air was strongly recommended for the cure of consumption by Piso, in 1580; and Bennet, a London physician, living about the middle of the seventeenth century, directed his patients to breathe the atmosphere of a chamber filled with fumes of medicinal substances, especially of the gum-resins. But it does not appear that any of these endeavors to employ inhalations were particularly successful, and they had fallen into disrepute when the detection of oxygen and other elementary gases led to the mode of treatment being revived by Beddoes. Yet the exaggerated statements with reference to its action, the uncertain effects, and the attempt to make inhalations serve the purpose of a panacea, produced again, very naturally, an utter want of confidence in them, which was only disturbed by the discovery in this century of iodine and chlorine. These agents were eagerly seized hold of by those physicians who had not lost all faith in inhalations, partly with the view of acting on the affections of the respiratory organs; partly because a better knowledge of physiology was teaching that we may make use of these organs to modify the blood, and thus alter the condition of the whole system. The results obtained were to a certain extent successful; and the same may be said of the inhaling of the fumes of belladonna and stramonium, of turpentine, of tar, and of the vapors of muriate of ammonia—all of which have been recommended by men of eminence still in our midst, and are to this day resorted to, particularly in asthma and in bronchial affections, and I allude to turpentine in gangrene of the lungs. Little if any good followed the use of inhalations in consumption, and it was perhaps from being so generally disappointed in their action in this complaint that the profession allowed inhalations to be in the hands of quacks, who, pandering to the popular feeling that remedies to affect the lungs ought to be addressed to them, availed themselves of these agents to allure and to deceive. This was strikingly shown by the use the versatile charlatan St. John Long made of inhalations, which, conjoined to his linament, formed that treatment through which he became the pet of the fashionable circles in London, and particularly of the female portion. In the room of the handsome adventurer were two enormous inhalers, placed in the interior of a large mahogany case resembling an upright piano. From it flexible tubes ran in all directions, at which numbers of persons were eagerly drawing, while dozens of excited women, of all ages, were waiting until a mouthpiece should be at liberty.[1] And all over the world were men who, more or less closely, and according to their powers, copied the doings of this ignorant pretender, and have continued until now to do so.

Such, then, is an outline of the history of inhalations by vapors and gases. But there were some practitioners of good repute who endeavored to bring solids and fluids in contact with the diseased membranes. This, too, or at all events the use of powders by insufflation, had its origin among the physicians of antiquity, though the most systematic attempts to accomplish this purpose belong to the present day, and insufflations of alum, of nitrate of silver and other articles, through tubes so curved that they could be passed as far as the larynx, have been frequently tried. These attempts were greatly stimulated by finding that, in those whose occupations expose them to it, minute particles traverse the bronchial tubes and become imbedded in the lungs, as has been proved to be the case in the phthisis of coal miners, and knife grinders, and millstone makers.[2] Moreover, we know that those who talk most while exposed are most subject to pulmonary complaints; for among

[1] "A Book about Doctors," by Jeaffreson. 1860. Chapter, "St. John Long."

[2] See particularly a case by Peacock, in Brit. and For. Med.-Chir. Review, Jan., 1860; and on the coal miner's lung, Greenhow, in Transact. of Path. Society of London, 1865.

gunsmiths and workmen in arms we are told that the ones who suffer most are "les ouvriers bavards et ceux qui on l'habitude de chanter en travaillant."[1] But, notwithstanding these proofs that the lungs can be reached by pulverized substances, and the zeal with which the subject of insufflation of powders has been pursued by several observers, it cannot be said to have shown itself of much value therapeutically. Indeed, its only demonstrable value has been in cases of laryngeal disease.

The same may be said of the application of fluids to the disordered mucous membranes, as was so constantly and so skillfully done by Dr. Horace Green. Serviceable beyond all doubt in affections of the larynx, their injection into the bronchial tubes has not a very wide range of utility. For, besides the great difficulty of accomplishment, the diseases to which it is suited are not many, and the certainty that the liquid reaches the really affected parts is not great.

Thus, then, neither vapors and gases, nor solids nor fluids yielded results that could be looked upon as encouraging with regard to the topical treatment of diseases of the organs of respiration. Nay, if we except the inhalation of the vapors of tar and turpentine, and a few others above mentioned, the whole subject was receiving very little attention from the profession, until a plan of breaking up fluid into very fine particles was proposed by Sales Girons. This has reopened the whole question in how far a local treatment of the disorders alluded to is beneficial or likely to succeed. But, whatever be the verdict on this point—and it is one of the chief objects of this paper to aid in contributing towards that verdict—it is certain that in the formation of a fine spray, or "pulverization of fluids," or "nebulization," or "atomization," we have gained a therapeutic means of great value, which has an applicability much wider than merely to the treatment of the respiratory maladies, and which henceforth will be employed, though it be rejected for the purpose for which it was originally intended.

The first experiments of Sales Girons were crude. They were carried on in a room set apart at a watering place. The mineral water, either in its natural state or impregnated

[1] Guérad. Comptes Rendu de la Société d'Hydrologie Médicale.

with various medicinal substances, was projected through a tube with great force by means of an air pump placed in an adjacent apartment. As the stream filled the tube the fluid was forced out of six or more capillary openings, and, impinging against the surface of a metallic disk, was broken up into a mist, which the patients—for several inhaled at the same time—breathed. Though protected by appropriate garments, no sick person relished much the dampness and inconvenience of the whole procedure—one, it may be mentioned, in passing, very similar to the previous attempt of Auphan at Lamotte-les-Bains, and differing chiefly in the fluid not being dashed directly against the walls of the apartment where it was pulverized, much in the way as a waterfall which strikes against the rocks is broken up into a spray. Unless, then, something more convenient could be discovered—some apparatus which was portable, easily managed, and yet atomized fluid very finely—the experiments would not, in their practical application, have been of much value. After repeated trials this was successfully accomplished by Sales Girons, and others have since followed in his footsteps. I shall briefly describe these instruments, of which now many forms exist, particularly such as I have found to be of most service, pointing out what I believe to be the chief merits and defects of each.

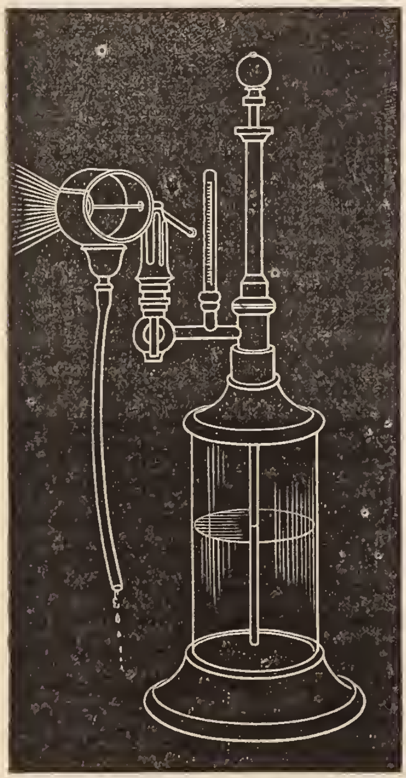


Fig. 1. The original Apparatus of Sales Girons.

The first of the portable kind, projected by Sales Girons and made by Charrière, consists of a vessel in which the fluid to be atomized is poured, and which is attached to an air pump placed above it. The air, compressed on the surface of the fluid, drives this through a very fine opening, arranged with a stop-cock, against a small metallic disk, where a very minute spray is formed. The condensed fluid passes off through a gutta-percha tube. The amount of pressure is indicated by a manometer. A pressure of from three to five atmospheres is sufficient. A modification of this apparatus, in which the vessel is made of glass instead of metal, is generally known as the second model of Sales Girons. But Sales Girons himself has recently greatly simplified his whole apparatus, left out the manometer, and made the instrument lighter and very much easier of employ. It consists of a pump which forces the liquid through a fine opening in an ingeniously arranged stop-cock against a metallic disk, as in the other nebulizers. The opening in the stop-cock can be increased or diminished in size by simply turning it in a backward or forward direction, and a very fine spray is undoubtedly obtained by this instrument.

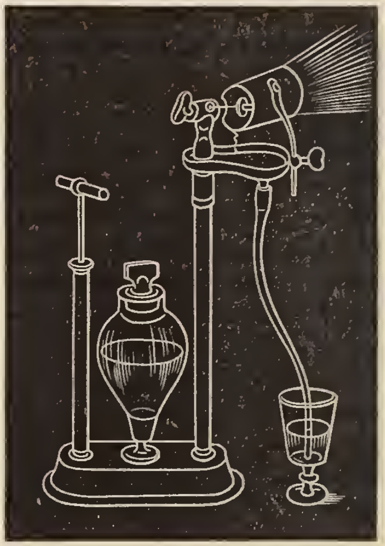


Fig. 2. The new Atomizer of Sales Girons.

The first mentioned model of Sales Girons is now but little used; but it has an historical value, since on the same principles many others have been constructed—for instance, the atomizers of Fournié, Waldenburg and Lewin. The latter instrument has a very great advantage in its consisting chiefly of glass: the tube through which the medicated fluid passes is of glass, the disk against which the stream of fluid strikes in the cylinder of glass is gilt, and thus is unquestionably avoided one of the most serious objections to the atomizers of Girons, and which renders them unfit for the use of chloride of iron, nitrate of silver, and other articles that act on metal.

On a similar principle as the last model of Sales Girons is a nebulizer, in which the pump works by a long handle, and the fine stream impinges against the side of the cylinder, but not against a metallic disk. I think this apparatus was originally made by Matthieu; and to it, as well as to the last invented one of Sales Girons, may be attached a little tube, through which a capillary jet passes with such force that it penetrates the skin, and may be used to inject medicines hypodermically.

Fig. 3. The Pump Nebulizer.

In all the instruments alluded to the fluid is forced by strong pressure against some firm body, where it is broken up into very fine particles. But another principle has been made use of to accomplish this purpose, namely, the action of a current of air compressed in a large ball, and which, intermingling with the fluid, changes this into a minute spray as it rushes out of a capillary opening. This instrument, the "Nephogène" of Matthieu, is handled with readiness; but it is apt to get out of order, and the spray is thrown with greater power than is usually advisable; moreover a large quantity of atmospheric air is projected into the air passages with it. A far better application of using a current of air as the means of atomizing the medicated liquid was made by Dr. Bergson, by employing the same kind of tubes as are now so extensively sold as odorators, for the pulverization of different scents. Two glass tubes, with capillary openings, are placed at right angles to each other, in such a manner that the end of the vertical tube is very close to and about opposite the centre of the capillary opening in the horizontal tube. Through this the air is blown while the vertical tube is dipped in the fluid to be atomized. The air in the latter tube is rarefied; the liquid rises to the capillary opening and is there pulverized by the current of air from the vertical tube. Two tubes properly arranged are then all that is strictly required for this simple apparatus, for the air may be blown by the mouth through the horizontal tube. But in point of practice this procedure is both irksome and unpleasant, and to avoid it an ordinary Davidson's rubber syringe may be attached to the horizontal tube; or, better still, a continuous stream may be obtained, as proposed by Bergson, by a bellows, connected with an air chamber. The bellows is worked by the foot. Yet more convenient is a similar arrangement of Andrew Clark, consisting of two balls, the lower of which is pressed by the hand, and the upper of which, surrounded by a silk network, acts as an air chamber.

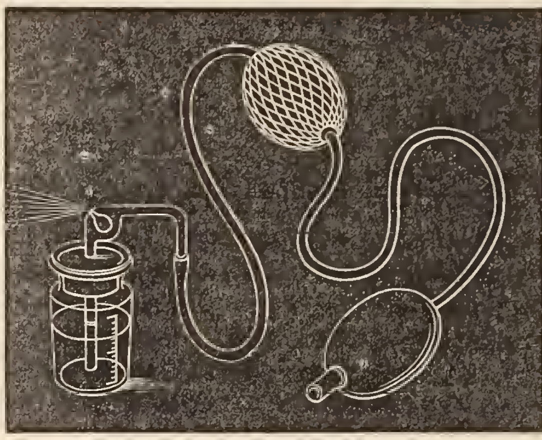


Fig. 4. The Hand-ball Atomizer.

The principle of Bergson is distinguished by great simplicity, and is very readily applied. The tubes may be made of silver or of glass. Those of the latter are generally preferable. They are much more easily kept clean, and can be used with articles which corrode the former. On the other hand they are more easily broken. Those of glass can be kept clean by soaking them occasionally in muriatic acid and water, or pulverizing a little of this mixture through them. If the tubes become clogged, a bristle or a very delicate metallic wire is the best means of removing the obstruction. A pin or a needle is apt to break the fine points. The tubes may be made of any length or calibre. To produce a delicate spray, the openings at the ends, where placed in juxtaposition, ought to be very small. The hole in the horizontal tube may be somewhat larger than the capillary opening in the vertical tube. A modification in the shape of the tubes, as seen in Fig. 5, was proposed by Prof. Winterich, and is often of great service. By virtue of this arrangement we can generate the spray within various parts of the body. I have had tubes of the kind made of all sizes and of different curves—to pass up the nostril, as in the treatment of catarrh; to place in the ear and reach the membrane of the tympanum; to apply near the back of the throat, or immediately over the entrance of the larynx—thus furnishing a far better means for local treatment than the ordinary sponge probang, and even better than the laryngeal fluid pulverizer of Gibb. If it were judged expedient as a therapeutic means, they could be so shaped as to throw a spray even into the interior of the uterus or bladder. The instrument adapted by Richardson for local anæsthesia is a spray producer acting on à similar principle to that just described, and may also be made use of in the treatment of throat affections—in fact, for very many of the purposes for which a spray producer is needed.

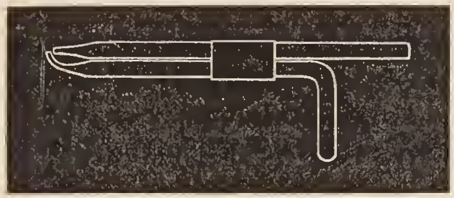


Fig. 5. Bergson's Tubes of modified shape, united by an India-rubber band.

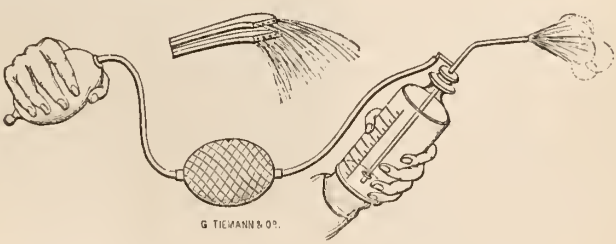


Fig. 6. Richardson's Spray Producer.

We have now discussed the atomizers in which air acts as the forcing power, or in which the fluid is driven by a piston through a narrow opening. They require, of course, a certain amount of exertion on the part of the patient, or an assistant.

This is obviated in the ingenious apparatus of Siegle, who substituted steam as the motive power. Adopting the arrangement of tubes of Bergson, he has added to it a small boiler, made of metal or of glass, in which steam is generated by means of a spirit lamp. The steam plays the part of the compressed air, and as it escapes projects as a fine spray the liquid placed in the cup. The degree of pressure is indicated by a thermo-barometer, marked 1 and 2. It is safe enough to let the mercury range between 1 and 2; above this there is some danger. By lowering the flame the steam is generated with less rapidity and force. A small lamp under the glass cup containing the medicated fluid heats this, and thus the inhalation may, if necessary—which, however, it extremely rarely is—be given very warm. Fig. 7 represents Siegle's apparatus in its most perfect form. In addition to the thermo-barometer we find a safety-valve.

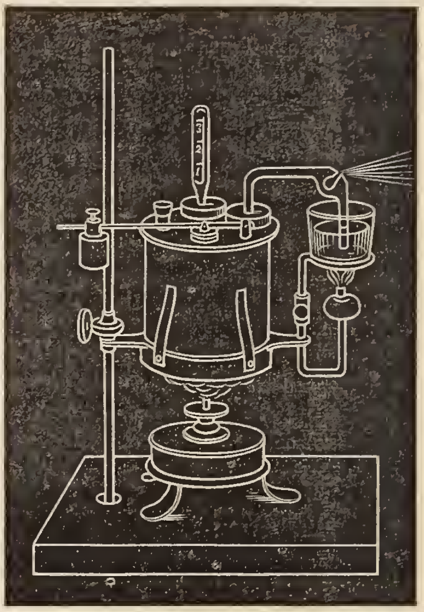


Fig. 7. Siegle's Large Atomizer.

Now, on Siegle's principle, numerous instruments have been constructed. The size of the apparatus, its shape, the lamp, have been modified; but few of the modifications are really improvements. It may, however, for ordinary purposes, unquestionably be much simplified; and Mr. Gemrig, an instrument maker of Philadelphia, has constructed, according to a design I gave him, a steam atomizer, which is both simple and very convenient. It consists of a copper boiler, with a spring safety-valve in place of the thermo-barometer. By unscrewing the safety-valve the water can be poured into the boiler. This fits into a metallic tube, at the bottom of which a spirit lamp is placed, the flame of which can be heightened or lowered. The atomizing tubes are inserted into a cork, or a perforated piece of gutta-percha, which is readily fastened by a metallic rim with a bayonet catch. In some of Siegle's instruments this point is omitted,

Fig. 8. Siegle's Apparatus, with water-gauge (B) and valve (F), as modified by Krohne.

and the cork or piece of rubber is liable to be blown out when the steam is generated. In his largest apparatus (Fig. 7), screws hold down the India-rubber at two of the openings. Leaving out the thermo-barometer is, in any apparatus, excepting those for purposes of very accurate study, a great gain. It is irksome to the patient to be constantly watching it whilst inhaling, and is apt to get broken. The simple apparatus just described is shown in Fig. 9; its component portions are seen in Figs. 10, 11, 12 and 13. When in action the boiler should be about two-thirds full of water, and after the medicated fluid

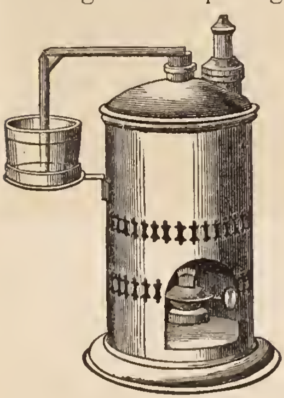


Fig. 9. Simple form of Steam Atomizer.

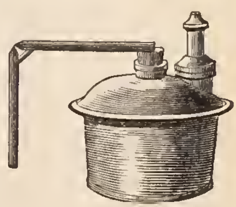


Fig. 10. Boiler with tubes attached and spring safety-valve.

has been pulverized the tubes should be cleansed by letting the instrument nebulize pure water.

As the various apparatuses for atomizing liquids have been passed in review—and in so doing I have endeavored to describe rather the different principles that have been suggested for their construction than attempted to give a complete list of all the instruments which have been proposed—I may now state what I believe to be their relative efficiency. The most perfect as well as the most efficient is that of Siegle, or some of those framed on his plan. The steady stream, the possibility of working the apparatus without fatigue and without an assistant, the small quantity of medicated fluid required—while in most of those which are set in action by a pump the quantity is very great—are all features of pre-eminent value. Then the minute division of the fluid and the warmth of the spray that reaches the respiratory organs, are also points of decided consequence. But under some circumstances other atomizers will answer better; for instance, in the treatment of affections of the throat or nares, or even in many of those of the larynx, the nebulizer depicted, Fig. 3, or Bergson's tubes with the bellows attached, may, for the most part, be more easily and advantageously employed. Again, they may be resorted to when the patient is in the recumbent position; when he lies in such a manner that an instrument with a lighted lamp cannot with safety be placed near him; when the heat of the weather renders it annoying to use a steam apparatus; when a cold rather than a warm inhalation is therapeutically desirable; when, on account of the time lost, it is inconvenient to have to generate steam; or when the patient is careless, or not intelligent enough to learn to use an apparatus which requires both

Fig 11. Metallic tube, at the upper part of which the boiler is placed and at the lower part the lamp.

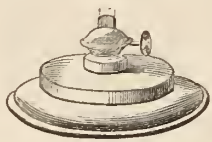


Fig. 12. Lamp, with screw to raise or depress the wick.

Fig. 13. Cup for medicine, and rest with slide to hold it.

care and some intelligence to use properly. Then, in very many cases, particularly those of affections of the fauces and windpipe, the quantity of medicated fluid necessary is but small, as, for example, when solutions of caustic are required. And here the hand-ball atomizer will be found very convenient. Indeed, I think that, excepting the steam nebulizer, this is the best form of spray producer—superior to that of Sales Girons, and to the one depicted in Fig. 3; and for the purposes just alluded to it is even better than the steam atomizer, while its ready use and portability, the fact that the fluid can be injected without any or with but slight co-operation on the part of the patient—in children especially a very great advantage—and the manifold employ to which it can be put, are additional recommendations. Yet it cannot be said to take the place of the steam atomizer in the treatment of diseases of the lung. It becomes too irksome and fatiguing to work it long enough to produce the quantity of spray required for each inhalation.

But whatever apparatus be employed, there are some points to be observed in the use of inhalations, the neglect of which will seriously interfere with the benefit to be derived from them, and may, indeed, cause them to be abandoned in disgust. And, in the first place, we should instruct our patient in the application of the instrument, show him how to keep it clean, how to tell when it is working properly. This implies that he should have one in his possession. In truth, excepting when resorted to in certain affections of the larynx and fauces, or for a mere temporary purpose, and particularly when required in chronic diseases of the lungs, the inhalations ought not to take place at the physician's office. The patient must employ them once or several times daily, and unless he can attend to them himself, in the same manner as he knows how to take his tonic pill or his cough mixture, the treatment will be inefficient. It is evident, then, that he must, as a rule, carry on the treatment at his own house. At the first inhalations the physician should always be present.

When the patient is ready for the inhalation he should sit in front of the apparatus, in a convenient position, and in such a manner that the spray is formed on a level with his mouth. The mouth must be kept wide open and the head slightly inclined backwards. The distance proper to sit from the spray producing tubes varies. When he begins the inhalation, he ought to be about six inches from them. This distance may be increased from one to two feet, according to the object we have in view. If we wish the patient to inhale a large quantity of the spray, and at a high temperature, let his mouth be near to the apparatus. And we direct him to take deep breaths when we desire to reach the bronchial tubes and more distant portions of the respiratory channels, while we insist upon shallow breathing if our intention be to act on the fauces and upper part of the air passages. But under no circumstances should he breathe in such a manner as to be fatiguing to him; and it will be often very necessary to restrain him from respiring with much effort and hurriedly.

In persons with sensitive mucous membranes the act of inhalation causes considerable cough. But even this can ordinarily be avoided by letting them breathe at first the spray warm and close to its point of production, and by commencing with inhalations of pure water. In most cases, after a few inhalations, no cough is produced; nay, strange to say, coughing is more apt to occur when the inhalation is over than whilst in progress.

A point always to be attended to is to see that the tongue is not in the way of the current, and that the spray can really reach the back of the throat. It is well to direct the patient to press his tongue against the floor of the mouth. If he cannot easily do this, a tongue depresser may be employed; but I have found it more advantageous to insert a short, small glass speculum, from three to four inches in length, into the mouth. This keeps the tongue out of the way, and yet he can breathe very readily through the tube. To prevent the face from becoming wet, a face shield may be employed, preferably made of glass or wood. It can be attached to the atomizer, as it is in the very serviceable instruments made by Dr. William Read, of Boston, or be

Fig. 14. Face Shield.

held by the patient, and so arranged with a depressed rim, into which a gutta-percha tube is fixed, that the drops of fluid which collect flow into a glass. But as a rule I find that patients prefer dispensing with a face shield. It is, of course, always necessary to protect the clothes with a napkin or towel, and to have a vessel at hand into which any of the fluid which may accumulate in the mouth can be expectorated.

As regards the frequency and the time of the inhalations, it is difficult to lay down general directions. But this much is certain: for the treatment to be effective, the patient should inhale daily, and breathe the medicated spray for about ten minutes or longer, taking in that time about one hundred respirations or more, and resting for some seconds after inhaling continuously for a few minutes. In many cases it is better to have him inhale twice or three times daily; and it is always, perhaps, more convenient to let him inhale a certain quantity, say one ounce of the medicated fluid, than to annoy him by directing him to count the frequency of the act of breathing. With a well constructed steam atomizer, the time of each inhalation should be from ten to fifteen minutes, and about the same time is required at each sitting with the nebulizer of Sales Girons, or any of those working with a pump. The first inhalations ought always to be short, so as to accustom the patient to them; and it is astonishing how, though they irritate him at the beginning of the treatment, he becomes less and less sensitive to them. The patient ought never to inhale on a full stomach, and should abstain from going out of doors for a quarter of an hour after the inhalation.

In these remarks I have had chiefly reference to the treatment of pulmonary affections, and secondarily to that of laryngeal diseases. But as the form of therapeutics under consideration applies also to disorders of the fauces and adjacent structures, I may briefly indicate in what manner the mode of procedure is to be modified in their treatment. The inhalation is of shorter duration, and need not, excepting in certain urgent cases, be done so frequently. The greatest care should be exercised to cause it to reach the affected spot; and to effect this I have often found the method above mentioned, by passing the current through a small glass speculum introduced into the mouth, very efficient. It has, moreover, the advantage of bringing the diseased surface thoroughly into view, and of limiting the action of the pulverized fluid much more completely to it. When the spray is thus passed through a speculum, and, even if the tongue be not in the way, by simply directing the jet to the affected textures, we can obtain results which are not attainable by means of ordinary local applications. The spray reaches parts more readily than the probang, and in certain cases produces a preferable and more permanent action. Its superiority over gargles is manifest, touching structures never or but scantingly reached by these, as for instance the posterior wall of the pharynx; so striking is this superiority, that for really useful purposes the day of gargles has passed. Even in enlargement of the tonsils, I have used pulverized fluids with considerable success. In one case, particularly, that of a little boy greatly troubled with chronic pharyngitis and enlarged tonsils, and liable on any exposure to acute exacerbations, they effected a cure which no other means could have accomplished. For each attempt to reduce by caustic or astringent solutions the tonsils, which nearly blocked up the half arches, was a signal for an outburst of passion and for violent resistance on the part of the child. To the treatment by pulverized fluids, such as of strong solutions of tannin, he submitted without objections. Let me add, in concluding the mode of inhalation and the modification necessary to suit them to individual parts, that the force of the current is an element also to be taken into account. A very strong current is not suitable for pulmonary affections; it is more suitable for those of the fauces. The spray projected with too much force is apt not to enter the air passages, but to condense on the walls of the throat.

(To be continued.)

Fracture of the Lens of one Eye and of the Anterior Capsules of both Eyes from Death by Violent Hanging. By EZRA DYER, M.D., Philadelphia.

(Read before the American Ophthalmological Society, June, 1866.)

As this is a case of remarkable interest, and, to my knowledge, the first on record, I shall report it in considerable detail. After death by hanging there are some lesions which we might look for in the eye, such as suffusion of blood under the conjunctiva, dislocation of the lens, effusion of blood into the vitreous, detachment of the retina, and perhaps rupture of the sclerotica. In this case none of these were found, but a decided *fracture* of the lens.

Anton Probst was born in Baden, is 24 years old, 5 feet 9 inches high, weighs 174½ lbs., is a firm, stout, healthy looking man, stands straight, has a rather sluggish expression of countenance, but not a bad one, eats and sleeps well. He is under sentence of death for the most brutal and deliberate murder of a whole family of eight persons, the youngest being only two years old. He beat their brains out with an axe, having enticed them one by one into the barn. When one was killed he covered the body with hay, and brought out another, the baby being the last.

At the time of the sentence he only weighed 162½ lbs., while on the day of execution, about six weeks after, his weight was 174½ lbs., a gain of 12 lbs.

Through the kindness of Drs. John B. Bidelle and H. Y. Smith, I was afforded every opportunity to make my examinations satisfactory and complete.

Two days before the execution I had the cell darkened, and with a common light examined both eyes carefully with the ophthalmoscope. The eyes are rather prominent, pupils a little larger than normal, and not very active to light, in fact decidedly more sluggish than usual; optic media clear, fundus normal, except that the scleral ring was a little more marked than usual—the same amount, however, often exists in healthy eyes. I proved his accommodation to be good. I examined his eyes again, but not with the ophthalmoscope, one hour before his execution. They were still slightly prominent, pupils large and clear, and a slight injection of the vessels of the conjunctiva was noticed.

Execution. He was executed June 8th, 1866, at 11 A. M. The scaffold was made with a drop floor, the rope was ⅝ths of an inch in diameter, 5 feet 6 inches long, and the fall was 3 feet.

The knot was adjusted under the left ear; death was very speedy and quiet. For two minutes, at intervals, there was a slight motion of the abdomen, as if in attempted respiration, and at the same time the knees were drawn up a little. He hung for thirty minutes, and was then instantly removed to the dissecting room, which occupied about four minutes. Prof. S. H. Dickson and Dr. W. H. Pancoast kindly assisted me, and corroborated my observations.

Post mortem examination, 35 minutes after the drop fell. Body and head moist and warm; there had been an emission of semen; face was livid, and the upper lid discolored; abrasion of the skin under the right ear, and a deep red mark all around the neck.

The eyeballs were not more prominent than before death; lids were closed and not discolored; there was scarcely any tension in the eyeballs; corneæ a little dull; pupils a little more dilated than before, and moist from mucus.

The body was placed upright in a chair and supported, as the head had a tendency to fall. The eyes were first examined with the same oil lamp that had been used at the examination before death. Nothing could be obtained but a deep tan color from the whole of the fundus.

Not being able to make out any of the vessels with the light from the oil lamp, it was removed to give way to a powerful electric light, which Dr. B. H. Rand kindly furnished me, from a battery of 36 cells. I ought to mention that, previous to the examination of the criminal, I had examined Dr. Pancoast's eyes, and he mine, with this light, so that the post mortem examination should have a real value. The fundus, as seen by this light, is magnificent, but I must not speak of it here.

The examination of the eyes of Probst with the electric light gave the following results: Right eye—there was a line running transversely across the lens, and about a line below the centre. From it, at various angles, ran short and long fine lines, very near together, but not regular. This line had an iridescent or opalescent appearance, and as it was illuminated a gentleman standing behind remarked that it looked like a crack in a cake of clear ice. At first I thought it a film of mucus on the cornea, but soon saw that it was in the lens. It was a fracture involving the anterior capsule, and extending in a horizontal plane backwards into the substance of the lens. It gave even to those present, unaccustomed to the ophthalmoscope, the idea of a plane extending backwards.

On rotating the ball downwards, the fracture could be seen to stop about the centre of the lens, and to end in several lines projecting backwards, longer than the rest. The little fissures running upwards and downwards from the main transverse fissure were of different lengths; more than half of those on the lower side ran down to the margin of the pupil, almost all those on the upper side extended above the horizontal diameter of the lens, and the longer ones perhaps a line further.

The whole lens had a most beautiful iridescent appearance, which was greatest in the line of the main fissure. This was determined by strong convex glasses. Nothing of the fundus could be seen, not even a trace of a vessel.

The left eye presented the same transverse line, a line and a half below the centre of the lens. It was evidently the same thing as in the right, only less in extent. The line had very short lines running upwards and downwards, which were very close together. They could only be seen with a strong glass, and gave the line a feathery look. I judged that here the crack was confined to the capsule. The line was perfectly evident to a person standing three feet behind the examiner. The fundus could not be seen. Neither pupil contracted under the light. The body was then laid on the table, and the battery used to contract the various muscles of the body. The flexors of the arms and legs responded, and I tried, from curiosity, to stimulate the contractile films of the iris, but without success.

The eyes were then removed, and four hours afterwards carefully examined. Dr. S. W. Mitchell assisted me. The condition of the right lens was precisely as described above. Lens in place; fracture transversely from *edge* to *edge* of the capsule, one line below and parallel to the horizontal diameter of the lens. From this crack a fissure extended backwards into the substance of the lens, as far as the middle suspensory ligament, which was not ruptured. Retina not detached; eye normal, except as above mentioned; left eye showed a line difficult to distinguish, but made out with certainty, corresponding in position to that of the right eye. It was undoubtedly a fracture of the anterior capsule. The weight of the fall coming principally on the right side (the knot being under the left ear) probably explains the difference in the condition of the two eyes.

Dr. Pancoast made a very thorough post mortem examination, which revealed nothing of interest, so far as the eyes were concerned, except the remarkably small size of the brain, which weighed only 2 lbs. 4 oz. instead of the average 3 lbs. 2 oz. There was no congestion or effusion in the ventricles. The spinal cord was intact, and the heart entirely empty.

I was so much interested in the subject that I procured three very large dogs, and hanged them in the following manner:

After the rope was adjusted, each dog was held as high as a man could reach, and then dropped. The man followed the body down with his hands, and as soon as it was brought up by the rope the man pushed it down with all his force, adding at least twenty pounds to the force of the fall. The drop was three feet.

Drs. S. W. Mitchell and W. W. Kern assisted me; dog No. 1, weighing 35 lbs., was hanged with a drop of 3 feet; the rope broke. He was tried again with the rope doubled, but it broke again. His eyes were now examined to see if the two shocks had occasioned any change in the eyes; they evidently had not interfered with his bodily health in the least. A slight line, looking exactly like those in the eyes of Probst, about a line in length, was observed in the left eye, starting from the external border of the pupil towards the centre. He was now hanged the third time, a new cord being used, which held. Death was very quick and easy; the first two attempts did not seem to trouble him at all. The last fall was at 7 o'clock 6 min.; at 7.9 examined by gas light; media were clear, and a most strange appearance of the fundus was observed. It seemed to move like a panorama, first from right to left, and then suddenly changed and moved from below upwards.

The movement was quite rapid and steady, and lasted for more than a minute. I wondered if he saw the beautiful changes of scene and color which people experience when hanged, as so often described. At 7.10 the line was longer and more distinct, being evident to the naked eye; at 7.15 a large clockwork magnesium lamp was used, and the rupture seemed twice or three times as deep.

It is evidently in the posterior half of the lens, but runs horizontally from the posterior capsule towards the centre of the lens. Radiating lines are seen, and cross lines pervade the lens.

7.25, same appearance, only more marked. Nothing to be seen in the right eye. At 7.30 he was hung up in another place to make room for dog No. 2, weight 30 lbs.; drop, as before, 3 feet. When first examined the media were found clear. After half an hour's observation nothing abnormal was observed. He died hard, and struggled from 8 to 10 minutes.

Dog No. 3, weight 30 lbs., dropped 3 feet. Hard struggles, but not so hard or protracted as No. 2. Eyes examined previous to the hanging, and found normal. After hanging 15 minutes a faint line was seen across the right lens; 30 minutes after, very marked and distinct. At this time, an hour and a half after dog No. 1 was last examined, another examination was made. An Argand gas light was used. Dog No. 1: left eye—fissure across the lens very marked and distinct, can be seen by a person standing behind the one using the ophthalmoscope. The radiating and other striæ of the lens are well defined, and the lens is cataractous. From the radiation of the lines it is evident the lens is not displaced. Right eye, which at first showed nothing, now has a transverse line similar in direction and position to that in the left eye, and very closely resembling that in the left eye of Probst. The knot in this case was on the right side at the last hanging. Dog No. 2 shows no change at all in either eye. Dog No. 3 has distinct but not deep transverse fracture of the lens of the right eye; left shows nothing. There was no dislocation of the lens in any of the eyes.

I consider that these experiments are very satisfactory. They were made with every precaution and great care, and the results are certainly interesting. I will not attempt to explain the matter, but in a few words give the *résumé:*

One man and three dogs were violently hanged. The man and two of the dogs, *i. e.*, three out of four subjects, showed this peculiar lesion. The man and dog No. 1 died without struggle. In both the fracture extended through half the lens of one side and across the capsule of the other. Knot on the opposite side of the greatest lesion in both cases. Dog No. 3 died with convulsions, which lasted a short time. Lesion found in one eye well marked, the other eye normal.

Dog No. 2 died with prolonged convulsions; no lesion could be observed. We do not find this result in death from natural causes. Is it connected with the sudden concussion and shock to the nervous system? The whole subject is so new to me that I content myself at present with a mere statement of facts, proposing still further to extend my experiments.

Contributions to Obstetric Jurisprudence. No. X. The Abetment of Criminal Abortion by Medical Men. By HORATIO R. STORER, M.D., of Boston, Assistant in Obstetrics and Medical Jurisprudence in Harvard University; Surgeon to the New England Hospital for Women; and Professor of Obstetrics and the Diseases of Women in Berkshire Medical College.

(Read before the Massachusetts Medical Society, May 30, 1866.)

In a previous printed communication[1] I furnished additional evidence to that I had already presented to the profession, of the frequency of abortions, both explainable and unexplainable by natural causes. It may be recollected that, so long ago as 1857, a statistical return was rendered to the Suffolk District Medical Society, from my private practice, based upon inquiries put to patients who were not merely married and of respectable character, but of good social standing, from which it appeared that intentional abortions must be of very much greater frequency than had been supposed. This result, being based upon positive evidence, that of confession, could not be invalidated by the doubts of any gentleman who had not pursued a similar course of inquiry, and the point which it involved has since been corroborated by many credible witnesses.

From the date referred to, a period of nine years, I have

[1] Studies of Abortion. Boston Med. and Surg. Journal, Feb. 5, 1863.

now steadily kept one end in view, and from a constantly increasing practice, at first more particularly and for several years entirely devoted to the special diseases of women, I have been led to recognize certain general laws, to which I shall now but briefly allude. Among these are the following:

1. That while, owing to the advance of our knowledge in the treatment of child-bed, more children are born living than formerly and more mothers saved, and owing to our wiser treatment of the diseases of children and their exposure to better sanitary conditions a much larger percentage of them reach maturity, yet among the better class of inhabitants fewer infants are born; that is to say, that the average number of births to each Protestant family is less than it was half a century ago.

2. That of the pregnancies in reality occurring in this class, fewer reach completion.

3. That of the instances of conjugal intercourse taking place, fewer result in impregnation.

4. That of these incomplete pregnancies and apparent instances of sterility, a large proportion are intentional.

5. That such willful interference with the laws of nature is productive, as might have been expected, of a vast amount of disease—disease whose causation has been unexplained, and whose character is made evident alike by the confessions of the patient and by the results of a more natural course of life.

6. That intentional abortions are a greater tax upon a woman's health and more surely followed by uterine disease than pregnancies completed, and this even though the patient may seem to rally from them with impunity—the result showing itself, if not immediately, then after a lapse of years, or at the turn of life.

7. That the systematic prevention of pregnancy, by whatever means, is also followed by prejudicial effects, affecting the nervous and the uterine systems, not unfrequently producing sterility from an organic cause, and laying the foundation of serious or incurable disease.

8. That when such prevention is occasioned by incompleted intercourse, whether effected by the use of capotes or by untimely withdrawal, the effect is equally bad for the husband's

health as for that of the wife—there resulting dyspepsia, functional or organic nervous disease, and at times impotence, temporary or persistent.

To the latter of these dogmas, partially included as are its cases in the range of my present professional observation, I am glad that I have the support of my friend, Prof. Bumstead, of New York, who is now known as the best American authority in the sexual diseases of men. He has lately written me as follows:

"I would gladly talk with you about one point you allude to in your letter, to wit, the effect upon the health and upon the genital power of various preventives against conception. In the early part of my practice I was exceedingly skeptical with regard to any evil resulting therefrom; but I have so often been applied to by men complaining of loss of virile power, and who, I have found, have been in the habit of 'withdrawing' or else using condoms, that for several years past I have looked upon this as a cause of impotence."[1]

As to the physical evils of forced abortions and of the prevention of pregnancy, no one who is at all devoted to the study or treatment of the diseases of women can have failed to perceive them, and yet scarce an author has dared to approach this subject. Not a word upon it is said by Whitehead, the best English authority upon abortion and sterility; not a word by Gardner, of New York, the best American systematic writer upon the latter topic, and it has not been referred to by Marion Sims, in his work just published. The evils alluded to seem to have first been distinctly pointed out to the profession by my father in 1855, in an Introductory Address, delivered to the class at Harvard Medical College; and yet such was the fear of several of the faculty at that time lest the facts in the case had been misobserved, or lest erroneous conclusions had been deduced from them, or lest their avowal might prejudice the school in the eyes of the community, that they urged upon their lecturer the suppression of the very pith and marrow of his address. I am sorry to say that the gentlemen carried

[1] I took occasion to refer to the above topic in my article on the "Medico-Legal Relations of Rape" (this Journal, Nov., 1865), and to Dr. Bumstead's corroboration of my opinion.

their point, but I know that the concession was only one of courtesy and by no means one of conviction. If our alma mater, in any of her provinces, ever fears to allow the truth to be spoken, she is recreant both *Christo et Ecclesiæ* and to all her old traditions, and one at least of her sons will not hesitate to upbraid her for violating the ethics she herself has taught him.[1]

The physical evils to women, of which I have spoken, have been deemed by the American Medical Association of sufficient importance to warrant an appeal upon the part of the profession to women themselves, a course which was long ago warmly commended by excellent authorities, as by the *Boston Medical and Surgical Journal*, in an editorial article published December 13, 1855,[2] and the little "Why Not, a Book for every Woman," that is now circulating throughout the country in obedience to the command of the Association, may do something to prevent the evils which we are often but powerless to cure.

I have more than once urged upon the profession that interference with the normal process of procreation, whether by preventing pregnancy, or by cutting it short when established, was a serious cause of injury to the nervous as well as to the uterine system.

These views have been presented more distinctly in the last published volume of the American Medical Association.[3] Every day more and more confirms me in my conviction concerning their truth, and it is within the present week that, at a long and most interesting personal conference, my good friend Dr. John S. Butler, Superintendent of the Retreat for the Insane, at Hartford, has communicated to me, from his own private and public practice, many cases of insanity in women, based as to causation upon the induction of criminal abortion, and the systematic prevention of pregnancy. They are simply corroborative of what I have myself repeatedly observed.

Upon all the points that I have indicated there is very much

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[1] For a free discussion of this whole matter see the Boston Medical and Surgical Journal, for December, 1855, p. 409.

[2] Ut Supra, 4. Boston: Lee & Shepard. 1866.

[3] Transactions of Am. Med. Association. Vol. xvi., 1865, p. 122.

of interest that has never yet been said, and for this, it must be confessed, there is pressing need.

It has become useless for any one to allege, as has so often hitherto been done, that attention must not be given or called to these important subjects. Some of the most intelligent physicians of Great Britain and the Continent are now engaged in their investigation. The sexual relations lie at the very foundation of society; their aberrations are not the result of chance, but of an efficient cause; when general and common, then, these are occasioned by habits and customs which rest directly upon the moral sense of the community. The abnormal customs referred to are productive of much disease and of many kinds; and these, like all others, whatever their symptoms, can only be rationally treated by reaching their cause. It is untrue that discussion but spreads the evil. To cure a fetid and burrowing sore, it must be freely laid open and exposed.

In the present paper I intend to confine myself to the consideration, and this but partially, of a single point—interesting to every member of the profession—namely, the abetment of criminal abortion by medical men.

To the importance of this question, and to some of its aspects, I have already alluded in the sixth of my eight serial articles upon the medico-legal relations of abortion, published in 1859 in Philadelphia,[1] in which I spoke of the various manners in which members of our profession innocently, but very directly, become abettors of the crime. It was there shown that by any apparent disregard of the existence or sanctity of fœtal life, however evinced, we in reality increased its disregard by the community. If a physician appear to consider an unborn child of little or no account, why should not his patients also? I have also referred to this same unintentional abetment of abortion by medical men, in the prize essay of the American Medical Association.[2]

Few will doubt that my opportunities have been good for observation in this matter. The decided opinions that I have avowed, met as they were at first by so free expression of

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[1] North American Medico-Chirurgical Review, July, 1859, p. 643.

[2] Trans. Am. Med. Association, vol. xvi., 1865, p. 709.

skepticism and indeed of denial, could but awaken a corresponding degree of interest in minds alive to the importance of the subject; and my repeated consultation, personally or by letter, concerning abortion by many of the leading practitioners of this country, may perhaps give a weight to the remarks I may now make, that formerly might have seemed presumptuous for me to claim.

It will be recollected that in 1859, by order of the American Medical Association, a memorial was presented in its name to "the several Legislative Assemblies of the Union, with the prayer that the laws by which the crime of abortion is attempted to be controlled may be revised, and that such other action may be taken in the premises as they in their wisdom may deem necessary;" and that the association requested also, by formal memorial, "the zealous co-operation of the various State Medical Societies in impressing this subject upon the Legislatures of their respective States."[1]

This action was based upon a long, careful and very thorough examination of the whole subject by a committee consisting of Drs. Blatchford, of Troy, N. Y. (now lately deceased); Hodge, of Philadelphia; Pope, of St. Louis; Barton, of South Carolina; Lopez, of Mobile; Semmes, of the District of Columbia; Brisbane, of Wisconsin, and the writer, who were unanimously of opinion that the action desired was necessary.

A similar conclusion had previously been reached by a committee appointed by the Suffolk District Society, of this city, in 1857, consisting of Drs. Bowditch, Calvin Ellis and myself; and yet—in the face of the fact that in this commonwealth, according to the reports of the Attorney-General during the eight years from 1849 to 1857, omitting 1853, as there seems to have been no report rendered for that year, there were thirty-two trials for abortion, and not a single conviction—the Councilors of the State Medical Society of Massachusetts, to whom the propriety of a professional appeal to the Legislature for more protective statutes had been referred, decided that "the laws of the commonwealth are already sufficiently stringent, provided they are executed."[2]

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[1] Trans. of Am. Med. Association, vol. xii., p. 75.

[2] Medical Communications of the Massachusetts Medical Society, 1858,

It is not, however, the stringency of a statute, so far as by this is meant the severity of its punishments, but the certainty of their infliction, that is efficient to check a crime. By the laws of Massachusetts, the crime of abortion is considered as mainly against the person of the mother. In the case of her death, already sufficiently provided for at common law, convictions can indeed be effected, though with great difficulty, under the statute. If she lives, the crime practically goes unpunished. It is true that a few convictions have been obtained with us during the three years since 1863, but only by great effort, and probably in consequence mainly of the attention we have directed to the subject.

I have elsewhere called attention to this fact and to its explanation. "It has been thought, even publicly argued, that in the fact that statutes against abortion are almost everywhere not only not enforced, but not attempted to be enforced, there is afforded strong evidence of the existence of an ultimate and absolute impossibility of thus meeting the crime. The idea, though a fallacious one, is yet attributable to an important and evident cause.

"That the prevalence of abortion is in great measure owing to ignorance of guilt, on the part of the community at large, we have shown. We now assert that its futile prohibition by the law, its toleration, are plainly in consequence of similar ignorance on the part of legislators and of officers of justice.

"Our communities form their own laws, and, therefore, as was pointed out at the commencement of our remarks, these must necessarily bear the stamp of public opinion; while the officers by whom they are to be enforced—jurors, attorney,

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p. 77. How different from this was the action of the State Medical Society of New York. At its annual meeting of 1860, "Dr. Brinsmade, from the committee appointed to consider the recommendations of the American Medical Association, reported the following resolution, which was adopted: 'That the society cordially approves of the action of the American Medical Association in its efforts to exhibit the extent of the evils resulting from the procuring of criminal abortion, and of the means which are adopted to prevent its commission, and cheerfully comply with the request to a zealous co-operation for the furtherance of more stringent legislation in regard to this most destructive and revolting crime, committed almost with impunity, and with appalling frequency.'"—*Philadelphia Medical and Surgical Reporter*, Feb., 1860, p. 457.

judge—looking to the only source possible for their enlightenment on this subject, to medical men, have hitherto found but few bold and honest statements, and these unindorsed by the mass of the profession, or, in the total silence, a practical sanction of the popular belief. This is no exaggeration; the assertion is fully borne out by facts. Need we wonder, then, that the laws are not enforced, that indeed their enforcement is not attempted?"[1]

The causes of the general demoralization as regards child-bearing I have elsewhere explained.

"There are three of these causes, however," say the committee of the American Medical Association, "and they are the most important with which the medical profession have especially to do.

"The first of these causes is a wide-spread popular ignorance of the true character of the crime—a belief, even among mothers themselves, that the fœtus is not alive till after the period of quickening.

"The second of the agents alluded to, is the fact that the profession themselves are frequently supposed careless of fœtal life; not that its respectable members are ever knowingly and intentionally accessory to the unjustifiable commission of abortion, but that they are thought at times to omit precautions or measures that might prevent the occurrence of so unfortunate an event.

"The third reason of the frightful extent of this crime is found in the grave defects of our laws, both common and statute, as regards the independent and actual existence of the child before birth, as a living being. These errors, which are sufficient in most instances to prevent conviction, are based, and only based, upon mistaken and exploded medical dogmas. With strange inconsistency, the law fully acknowledges the fœtus in utero and its inherent rights for civil purposes; while personally and as criminally affected, it fails to recognize it, and to its life as yet denies all protection."[2]

To the action of the Councilors of the Massachusetts Medical Society, in 1858, based as it was upon the report of the

[1] Criminal Abortion in America, p. 74.

[2] Report on Criminal Abortion, p. 3.

committee appointed by the State Society at large, consisting of Drs. Foster Hooper, Jacob Bigelow, John Ware, J. C. Dalton, Ebenezer Hunt, Charles Gordon and myself, drawn up and rendered during my necessary absence from this part of the country, and without my being in any way conferred with, I entered by letter to the Councilors my earnest protest. This protest, so far as can be judged by the published proceedings of the Councilors, seems never to have been acted upon.

I should have long since brought the matter before the profession at large, had I not been prevented by ill health. That cause no longer exists, and after the lapse of eight years, during which the subject has never by me been lost sight of, I am but the more confirmed in the opinion that a grave error was committed by my colleagues. By the vote of the Councilors there was furnished additional ground for the third of the causes mentioned above, by which the profession become directly accountable for the increased frequency of the crime.

The resolutions adopted by the Councilors upon the occasion referred to may have been supposed by some to fully cover the required ground. They are, however, speciously framed—they in reality amount to nothing, begging the vital question, as they completely do, and, as one of the committee by whom they were offered, I again repudiate them.

These resolutions are as follows:

1. "*Resolved*, That the Fellows of the Massachusetts Medical Society regard with disapprobation and abhorrence all attempts to procure or promote abortion, except in cases where it may be necessary for the preservation of the mother's life.

2. "*Resolved*, That when any Fellow of this Society shall become cognizant of any attempt unlawfully to procure abortion, either by persons in the profession or out of it, it shall be the duty of such Fellow immediately to lodge information with some proper legal officer, to the end that such information may lead to the exposure and conviction of the offender."

It will be seen that exposure was here supposed tantamount to insuring conviction, where, under the laws as they exist, conviction has been proved impossible.

It were well did no other apparent sanction than such as this exist on the part of the profession. There are others.

Not only is gestation still allowed in many instances to go on to the full time, when a succession of still-births by the same patient has shown that the induction of labor a week or two prematurely might save the infant; not only is craniotomy still frequently resorted to where turning or the use of the long forceps might result in a living birth; not only is anæsthesia in child-bed still often neglected or refused, favorable though its employment would be to the life of the child and to that of its mother; not only is ergot extensively used to hasten labor unnecessarily, although its exhibition is undoubtedly in many instances attended with excessive danger to the fœtus; not only is a refusal to nurse, without due reason, on the part of the mother often permitted or advised by the medical attendant, although the breast of its own parent when in health is undoubtedly the best one on all accounts for her child, and far safer for its life than any artificial feeding; but "the criminal abuses likely to arise from the procurement of justifiable abortion by medical men are so numerous, their own liability to be thought by the public criminally careless of fœtal life or skeptical concerning its existence, is so great, that the subject is worthy special consideration."

That the fœtus is *alive* from the commencement of pregnancy cannot be gainsaid. Questions of physiology have, it is true, arisen regarding the nature of this life—some physicians even asserting that the cardiac pulsations previous to birth are but an instance of the acknowledged irritability of muscular fibre under the stimulus of a certain excitation, in this case, of blood that has in one way or another been decarbonized, or whose carbonization has been but imperfectly effected; and there are many interested persons, abortionists, for instance, who would claim that to pronounce the unborn fœtus alive argues ignorance of the plainest physiological laws. I do not hesitate, however, to assume such imputation, certain as I am of the support of all impartial and competent observers.

The induction of labor prior to the full period of gestation may be justifiably resorted to by physicians for but one of two reasons, either to save the life of the mother or that of her child. In each case it must be absolutely and only to save a life.

Performed before the latter end of the sixth month, the chances are that the child, if born living, will die. Prior to this time, therefore, the operation can only be justified by danger to the life of the mother, the child being almost necessarily destroyed. The induction of premature labor, properly so called, performed after the expiration of the period above mentioned, its propriety and necessity in certain cases, its impropriety in others, present points of great incidental importance to the main question we are now discussing; but at the present time I confine myself to abortion, before the seventh month, induced by medical men.

It is believed by the community that the operation is not unfrequently performed. I have already put upon record my belief to the contrary in the following emphatic language:

"It has been often alleged, and oftener supposed, that physicians in good standing not unfrequently, and without lawful justification, induce criminal abortion. This statement, whatever exceptional cases may exist, is wickedly false. The pledge against abortion, to the observance of which Hippocrates compelled his followers by oath, has ever been considered binding, even more strongly of late centuries. The crime is recognized as such in almost every code of medical ethics; its known commission has always been followed by ignominious expulsion from medical fellowships and fraternity. If this direct penalty be at any time escaped, it is only through lack of decisive proof—bare suspicion, even, of the crime insuring an actual sundering of all existing professional friendships and ties, a loss that subsequent proof of innocence could hardly restore. Such is the unanimous feeling of the profession; to its credit be it said, that with but a single exception, Jörg of Leipzic, and this to his eternal disgrace, its writers are all agreed, abstractly considering the subject, on the sanctity of fœtal life. The instances where physicians in good standing are guilty of the crime are of rare occurrence—the error that has prevailed on this point originating from the self-assumed titles of notorious quacks and knaves. But no condemnation can be too strong for the physician who has thus forgotten his honor—who has used to destroy life that sacred knowledge by which he was pledged to preserve it."[1]

[1] Criminal Abortion in America, p. 58.

On the other hand, it is no uncommon thing for women of good position to assert to me that abortion has been induced for them by gentlemen of excellent standing in the profession, especially among the older men, and I am constantly conferred with by other physicians to whom similar charges have been made. Allowing, as I cheerfully do, that many, perhaps the majority, of such allegations must be false, still there is in a certain number of cases a foundation in truth. I do not believe that abortion is often induced by regular physicians, with evil intent, but I do believe that it is not infrequently accidentally occasioned by them, and too often intentionally under a sincere but mistaken idea of its necessity. In the former of these cases, of which quite a number of instances have now been brought to my attention, the suspicion of intentional assistance on the part of the physician is almost sure to be entertained by the patient, especially if she is anxious to escape child-bed, whether or not she has given the slightest intimation whatever of her possible pregnancy. In the latter of the cases supposed, if the attendant knowingly kills the child, whatever the supposed necessity, without having first held a consultation upon the point with another physician, he should be held amenable to the bar of professional opinion, if not to that of the law, for having directly encouraged the crime.

In another communication I will confirm my assertion that professional abortions, accidental, should be more carefully avoided, and intentional should more seldom be resorted to, and never upon a single, unaided opinion.

The Treatment of Fracture of the Lower Jaw by Interdental Splints. By Thomas Brian Gunning, New York.

(The splints were described in a paper read before the New York Academy of Medicine, June 1st, 1864.)

In the year 1840, when treating the first fractured lower jaw placed in my care, I found treatment by bandages, etc., unreliable. For, while the muscles tend to displace the bone, bandages frequently increase the difficulty; especially when swelling sets in through their pressure. They also, by interfering with the circulation, tend to prevent union. Teeth, loosened by the injury, are left unsupported, and the motions of the jaw, cheeks and lips painfully restricted.

Of the contrivances invented to supplement bandages, many were even more objectionable, and little improvement has been made in general treatment up to the present time. Having successfully used interdental splints, in many cases which had proved unmanageable under the usual treatment, I am convinced that they are superior to all other appliances.

When a well adapted splint is on the teeth and gum, the other parts around the bone are, to a great extent, a counter-support to the splint. Thus the broken jaw, together with any teeth loosened by the injury, is held securely in place, until the fractured bone is reunited and the teeth become firm. Meanwhile the motions of the jaw are in most cases unrestricted, and the cheeks and lips always left free.

The best time to commence fitting a splint is immediately after the injury, if the condition of the patient will allow. If the fracture is old and has been treated by bandages, and there is much displacement of the fragments, with swelling of surrounding parts, it may be advisable to leave it *free* for several days.

When the fracture is not quite recent, pain and stiffness may prevent the patient from opening the mouth sufficiently to apply a splint, in which case the operator should force the jaw steadily downward with his fingers, assisted by wedges of wood, etc. This may be very painful to the patient at the time, but the movement of the parts, will be followed by great amelioration of the pain and stiffness. Hooks, forks and strings, applied to the teeth, will manage the fragments with less suffering to the patient than handling the inflamed muscles. The fragments of the jaw should be set and held by wire, pack-thread or silk, passed around the teeth. If the teeth are so formed that the ligature slips off, it may be carried through the gum with a needle. When a fragment of the jaw falls below the one next to it, a ligature of wire should be fastened around the neck of the lower tooth, two eyes being made by twisting the wire, before applying it. Another wire should be fastened around the neck of the elevated tooth, and both ends brought up on the side furthest from the fracture, over the crown, down through the eyes before mentioned, and then tightened until the bone is in place. Or the wire may be fastened to a tooth further back, and then pass over the crown, etc. On this principle, ligatures may be applied to the teeth laterally to bring the fragments into line. A jack-screw, furnished with points, forks and collars, is frequently necessary to extend the fragments, but in some cases it can be done by a piece of wood. The jack-screw should be made to turn by its centre, and the points, forks, etc., fitted into sockets, that they may be left still when the screw is turned. This instrument may be used across the mouth to keep out any back fragment that falls in, or more in front to extend oblique fractures. In fractures behind the canine when the back fragment comes forward over the front—being allowed to do so by the absence of teeth and the direction of the fracture—the jack-screw, with a point in the front fragment and a fork in the back one, will be found very useful in making extension. One fitted with hooks, to draw in the jaw by inserting both hooks near the external oblique lines, or in any required positions, will be found indispensable in some cases. A piece of hard wood forced in between those teeth which fall toward each other, and to which it must be fastened with fine iron wire, will frequently give the needed extension. When the jaw is broken between the canines, with the fragments smooth and the parts around allowing them to go in any direction, there is frequently a front tooth absent, through the fracture, or by shedding, etc. In this case a piece of moderately hard wood may be fitted in the vacancy. It should be so wide that the adjoining teeth will press into its sides, when they are wired tightly. If this is well done the bone will be firmly set. Should the teeth in question need support, they may be wired to those adjacent.

An impression of the parts should be taken in pure yellow wax, warmed by *dry* heat. But in comminuted fractures there may be portions of the jaw and teeth for which plaster of Paris would be better, but it must be applied in sections. The wax should be applied in a mouth-cup adapted to the jaw. No. 4 splint is precisely what is required for this purpose. (Some useful hints may be found under that head.) If fracture should occur in a jaw without teeth, plaster would be much the best. It should then be applied in a cup to all parts of the jaw at one time. If possible (and it is rarely otherwise), an impression of all the teeth and gum, *properly set*, should be taken at one time. The wax in coming off will then draw or enlarge in the right places, and the plaster-cast from it will be precisely what is required to mould the splint, excepting the addition caused by the ligatures.

If the bone cannot be held in place, an impression of each fragment should be taken separately, and the casts from these impressions united by plaster in their proper relative positions. A cast of the upper teeth will sometimes guide in doing this. The united cast must be enlarged under those parts of the teeth which overhang. But when the pieces of the jaw can be held *nearly* in place, an impression of all may be taken at one time, the cast separated where necessary, and then adjusted as above.

By adopting this method, when there is little displacement, the jaw may be left unset until the splint is applied. When adjusting the cast, care must be taken that it is not made too small for the jaw and teeth as a whole, or for any tooth individually. There is little chance of getting it too large, as far as the teeth are concerned.

On February 12, 1861, I applied a "hard vulcanized rubber splint" to the fractured jaw of a seaman in the United States Naval Hospital, and from the vulcanite splints used by me since that time I have selected three which show all that is essential to hold any fractured lower jaw in place.

The fourth, a metal splint, is sufficient for the treatment of most cases, and can be applied by surgeons and country practitioners, who can also treat most cases of fracture with rubber splints, if assisted by the neighboring dentist. But a severe fracture may occasionally be met with, which will require either a specialist or an accomplished dental surgeon.

Fig. 1 represents the inner surface of a splint which incloses all the teeth and part of the gum of the lower jaw, and merely rests against the upper teeth when the jaws are closed. This splint is adapted to the treatment of all cases which have teeth on both sides of the fracture, except those with *obstinate* vertical displacement.

Fig. 1.
The holes marked A go through the top of the splint for the purpose of syringing the parts within with warm water during treatment. The dark round spots in all the cuts represent holes for similar purposes.

The angles of the jaw tend outward, when the jaw is fractured through the body. It is therefore necessary that the splint should go down and extend back as far on the outside as the muscles admit, especially on the short fragment, if there is much difference between them. The parts near the external oblique line are so formed that the splint can be fitted to them perfectly. The outer ends of the splint should be quite thick, so that they may be well rounded.

When the gum on the inside is so overhung by the back teeth as to afford but little bearing for the splint, the latter may be cut off, generally at or just below the edge of the gum, for there is rarely any tendency of the jaw to fall in at its lower border. The splint should not extend into the muscles unnecessarily in any part.

When the jaw is fractured in or near the front, the digastric and other muscles, inserted on the inside near the symphysis, draw the bone backward and downward. This splint neutralizes the first by holding the sides of the jaw *in*, which prevents the arch in front from falling back.

The tendency of the jaw to widen at the angles and to fall in at its upper border, so that the points of the canines approach each other, is also counteracted. The splint goes down about half way (on the outside) from the points of the teeth to the lower border of the jaw, and all the surfaces of the teeth and the outside of the gum are held by it, while the condyles and their interarticular cartilages are so far above the lower edge of the splint that their leverage prevents the sides of the jaw from being turned outward by the muscles inserted near the symphysis.

This must be effectual so long as the splint is down in its place; and even when the fracture is back of the canine, and the four pairs of muscles are acting upon the front of the jaw, there is little chance that they will draw it down out of the splint, as they act in sympathy with the elevator and other muscles attached to the bone, when the *splint is on and the jaw allowed to open and shut.*

There is also, in recent fractures, a roughness of surface, which prevents the fragments from moving when held close together. But if the fracture is so old that the fragments slide past each other, especially if the back one slants away and affords no support to the forward one, it *may* be necessary to hold the latter up by a screw passing through the splint into the canine or some other tooth, near the depressed end of the bone. That horizontal displacement which frequently follows fractures near the canine and lateral incisor teeth, in which the front of the jaw is drawn back by the muscles inserted near the symphysis, leaving the end of the short fragment in determined projection, and in which the treatment by bandage and ligature is not only useless but pernicious, is effectually overcome by this splint, without screws. A large proportion of all fractures may be successfully treated in this way. When a *very* loose root or tooth is present, it may be advisable to remove it before application of the splint. Rarely so before the impression is taken, as they are frequently of use in holding the jaw.

I have generally used this splint without any fastenings, but in children or even adults it is sometimes advisable to secure it by packthread, wire, screws passing into or between the teeth, or by the wings and band of Fig. 4.

Fig. 2. *In cases with obstinate vertical displacement*, the splint, in addition to fitting the teeth and gum of the lower jaw, must also inclose the upper teeth, as shown in the cut, where screws may be seen opposite both lower and upper teeth.

By this arrangement the fragments of the lower jaw are secured, not only relatively to each other, but also to the upper jaw.

This splint is therefore adapted to the treatment of *all fractures back of the teeth*, whether in the body, the ramuses, or their terminations. In these cases the splint may be cut away in front, and extended across the roof of the mouth, when there are upper and lower back teeth to fasten to, and thus give as much room as possible to speak and eat through. Opening the teeth a quarter or three-eighths of an inch would not have any bad effect on the position of the fragments, even if the jaw were broken through the necks of both condyles, as the parts near the fractures would move but little and the back of the jaw could be raised high enough to keep the broken surfaces in contact. Even if the neck of one side only were broken, the lower part could be kept firmly up against the fragment above. In fracture of the ramuses no difficulty would arise from this course. If a coronoid process were broken, this plan would give as good a chance for union as any. In fracture of the angle, this process would be likely to hold the parts in contact. If it did not, a wing could extend out from the splint and pass back from the corner of the mouth to hold a pad, etc., against the part requiring support; it could rest on the zygoma, or the mastoid process, if necessary.

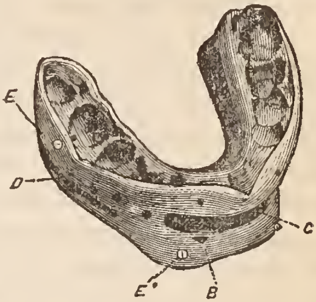

Fig. 2.

B, triangular opening, of which one side corresponds to the cutting edge of the lateral incisor, which tooth stood in the end of the fragment most displaced before the splint was applied. C, opening for food, speech, etc. D, channel for the saliva from parotid gland to enter the mouth, its fellow being seen on the other side of the splint. E', screw opposite lower canine tooth, head of the left screw being just discernible. E, head of screw opposite upper first molar tooth, end of its fellow being seen on the other side.

In cases where enough of the front teeth are lost to afford room for food to enter, the jaws need not be opened more than will just give room for the rubber to pass through to hold the parts of the splint outside the teeth to the parts inside. A separation of a line would be sufficient, or *even less*, if any back teeth were absent to give room for pillars of the rubber to hold the upper splint to the lower.

As a rule, the splint should be fastened on both sides, above and below. Fractures back of the teeth are frequently less troublesome, so far as application of the splint is concerned, than those which are broken in the body.

When the body is fractured behind the canine, the back fragment requires no support to keep it in the splint, the muscles doing that effectually. But that portion of the jaw which includes the symphysis, whether separated on one or both sides from the parts behind, must be *firmly held* up in the splint by one or two screws, according as it is fractured. When the fracture is between the lower canines, one firm upper central incisor will hold the splint up firmly. With fractures in the *back* of the lower jaw, a tooth on each side of the upper jaw, back of the canines, would be sufficient for any case. Teeth which have lost much of their supporting alveolar will *bear great strain* in the *direction of their sockets*, but the firmest teeth will suffer from slight lateral pressure; consequently ligatures are of little use, except temporarily. The thread must be removed from the screws on the ends which enter the teeth. The holes drilled to receive them should be from half a line to a line in depth, according to the size of the tooth. This will not injure the teeth, but they should be filled, however, after the jaw has united.

This splint can be made very thin, a shelly covering being all that is necessary in many parts. Openings should be cut in the sides where the absence of teeth or separation of the jaws gives a chance for the saliva from the parotid glands to enter the mouth, otherwise it may overflow at the lips. Small openings shouid be made opposite particular teeth, to observe how the jaw stands in the splint. This is important in all splints.

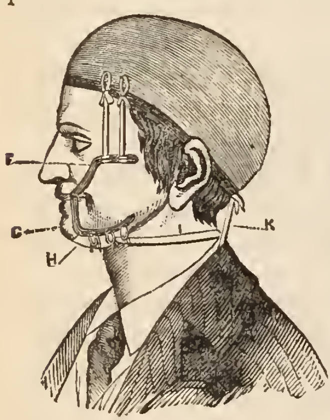

Fig. 3.

F, upper wing. G, lower wing. H, mental band to hold the jaw up in the splint. I, neck strap to keep the band back. K, balance strap to hold the cap in place.

Fig. 3 shows the wings for cases having no teeth in either jaw—the ends of the wings within the mouth being imbedded in a vulcanite splint similar in principle to that of Fig. 2.

Wings made of steel may be quite light. They should have fine teeth along the edges where the band and tapes bear to prevent slipping, and small holes every half inch to hold the strings, lacing, etc. The arch of the wings should be high enough to give the lower lip room to go well up. The wings for each side of the jaw are in one piece, and the parts within the mouth pass back in the line of the upper gum. They are thinned down and pierced with holes, that the rubber in which they are imbedded may hold them firmly.

The tape strings pass from the cap inside and under the upper wings, then up between them and the tape lacings (see figure), which keep the strings from slipping to the cap whence they started. The mental band passes up between the sides of the lower jaw and the wings where it is tied by the strings, which pass through the holes. (See figure.) The band is cut off to show this; but when worn it should be turned down on the outside and pinned just below the wings. The neck strap should be sewed to the mental band on one side and pinned on the other, and worn tight enough to keep the band from slipping forward over the chin.

The jaw and splint are supported by the cap forward of its centre. This is counterbalanced by the elastic strap which passes from the back of the cap down around an unelastic and much heavier strap, extending across and fastened to the shoulders by elastic ends. The balance strap returns to the cap and is buckled tight enough to hold the jaw up. At night it may be slackened to do this, with the neck flexed. It slides on the shoulder strap as the head inclines to either side.

By this arrangement the splint is a resting place for the broken jaw, while the wings give firm attachment to appliances which hold the jaw up with the least possible pressure upon the external parts, as the wings need not press either against the jaw or the zygomas.

Should the band fail to keep a very depressed fragment in place, a metal loop may be fastened to the wings. From this, a metal point going through the soft parts could be brought to bear on any portion of the bone requiring firm support. (See Malgaigne.) But no external appliances, especially those which rest upon the muscles, can give the firm and comfortable support afforded by splints fastened to the teeth. Therefore, with suitable teeth in either jaw, the cap, or the mental band and corresponding wings, should be dispensed with.

When getting the articulation, or relative position of the jaws and teeth, it is necessary to bear in mind that the *position* of the lower jaw is *peculiarly* dependent upon the muscles attached to it. Neglect of this has caused great mistakes both in diagnosis and treatment, patients having been put to much suffering by the endeavors of surgeons to set fractures which did not exist, the displacements supposed to indicate them being the result of fracture in another part of the jaw—the latter being drawn out of shape by the muscles, etc. (suffering from laceration, contusion or severe swelling), and *thereby prevented from going into proper articulation with the upper jaw*, while the surgeon supposes that the ramus, or neck of the condyle, etc., is broken.

With only incomplete fracture, in which the bone retains its shape so perfectly that treatment is unnecessary, weeks or even months may elapse before the muscles are able to bring the jaw into place, so that the lower teeth will close against the upper, as before the injury. In fact, this inability may be present *without any* fracture of the bone.

These injuries are frequently aggravated by bandages, and the displacements increased and caused by them in the broken jaw, and also in its relation to the upper, are sometimes irremediable by any subsequent efforts, even in cases which correct treatment in the outset would have cured perfectly.

In consideration of these facts, it is important to discriminate between displacements which can be reduced by art and those which should be left to nature.

The fragments of the lower jaw having been set in their proper places relatively to each other, the whole must be put in normal relation to the upper jaw, *as near as the condition of the muscles and ligaments admit.*

If the jaw is allowed to move during treatment, it will generally go into place before the bone is firmly united. When held still, it may not do so until some time after.

(Remarks upon displacement are given only so far as they are directly necessary to a proper application of the splints, and to an appreciation of their efficacy—the object of this paper. Correct diagnosis, however, is the foundation of proper treatment, and will be dwelt upon in an early number.)

Fig. 1 is the representative splint for the treatment of cases in the first class, or those in which the jaw is left free. Fig. 2 for the second class, or those in which the jaw is held still.

The articulation in each class is obtained by a method differing from the other. Consideration of these methods has been postponed until now, that they may be more easily understood. The reason for getting the articulation in different ways will be seen distinctly by recollecting that the fractures in the first class can be so *well* held together that the gutta-percha and wax have a firm resting place to carry them against the upper teeth. In the second class, however, it is frequently difficult, and occasionally impossible, to set the fragments in place, although it is desirable that *the splint* should hold them precisely so as regards each other, and, as a whole, in the best possible position relatively to the upper jaw. Now, the upper jaw, being uninjured, affords a proper basis for the gutta-percha and wax. The lower jaw can, therefore, be pressed *carefully* up in place, and any fragment *specially* directed into the best attainable position in the wax. The wax, with its support of gutta-percha, may then be put upon the cast of the upper jaw, and the adjusted cast of the lower jaw placed in it precisely where required, as there is now a second opportunity to overcome any imperfection in the bite made by the teeth in the displaced fragments.

In the first class, a piece of dentist's gutta-percha should be warmed by *water*, and moulded to the plaster-cast of the lower teeth, etc. Upon this sufficient wax should be placed to give a bearing for the upper teeth and the proper thickness to the splint. When cold it must be placed on the *lower teeth*, and the jaws closed until the upper teeth press properly into the wax, then replaced upon the cast and trimmed into the shape required for the splint. The indentations made by the upper teeth should be cut down, so that only their points may touch the splint. The whole should then be set in a vulcanizing flask, to form the mould for the rubber splint.

But in the second class, as indicated before, the gutta-percha, etc., should be placed upon the *upper teeth* or *gum*, and the lower teeth or gum brought up in place. The gutta-percha or wax, when taken from the mouth, should be placed between the cast representing the lower or broken jaw and that of the upper jaw, the wax then cut into shape, the female screws, or the wings, imbedded, and the whole set in a suitable flask.

The nuts for the screws should be about an eighth of an inch square, and a little less than a line thick, thus giving sufficient length to the female screws in the centre. The nuts should be beveled down, inside and out, on three sides, but the fourth only down to the middle one of three gold strips, of which the nuts are formed. This strip, being left long, should be turned over a short distance from the nut and its edges notched —it will then act as a standard to hold the nut in place in the mould. Each nut must also have a piece of tough wood screwed into it. To set them in position, bore a hole in the plaster tooth exactly where the screws are to enter the natural teeth. Place one end of the wood into the hole with the *nut* against the plaster tooth, and bring the wax up close around it. In this way the other end of the wood will stand out and be imbedded with the gold strip in the plaster forming the mould, and the nuts held firmly while the rubber is packed.

Dental works give full directions for the vulcanization of rubber, and also as to many things necessary to a successful application of these splints.

Before applying the splints, all the projections caused by air holes, or other imperfections in the plaster-cast, must be cut away, especially in the parts covering the teeth. The rubber may also be beveled off where it fits close on the festooned edges of the gum. This will give more room for the teeth to enter in applying the splint, and leave the gum unpressed while the splint is worn. The latter should be well oiled inside before application.

A piece of packthread or silk, about a foot long, placed around the neck of one or more teeth, is frequently useful to draw a fragment into the position suitable for entering the splint. It should be tied at the ends, but not around the teeth, so that it may be easily cut and drawn away before the splint is on tight. Although the fragments of the bone may not have gone completely into place before taking the impression, little anxiety need be felt as to their going up into the splint if the latter has been properly adjusted, as the muscular displacement frequently yields to the more normal condition produced by the splint, even when it is only partially in place.

If the jaw should not go well up in the splint, it may be worn loose for a day or two, to allow the muscles to relax. This, however, is rarely necessary.

Rubber splints are neat and comfortable. They can be kept free from food and all unpleasant odors, if frequently cleaned externally with a tooth-brush, and on the inside by means of a small sponge on the end of a crooked probe. They should also be frequently syringed with warm water, etc.

Fig. 4. This splint is made of tin. Six or eight sizes might be cast (and kept ready for use), from which one could be selected suitable for the jaw. The wings are of malleable iron, tinned to prevent rusting and for more readily soldering. Three sizes would be sufficient to select from.

The splint should have a handle in front, that it may be used as a cup to take the impression of the jaw—the holes being useful to allow a small probe to be pressed through the wax down to the teeth, thus allowing air to enter to facilitate the removal of the impression, and when in use as a splint giving entrance to warm water, thrown from a syringe, to keep the parts clean.

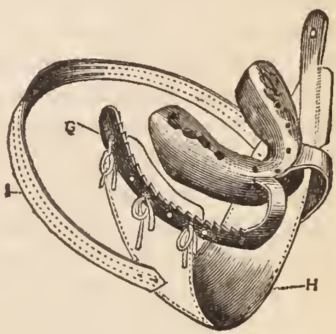

Fig. 4.

G, wing of malleable iron, projecting, with its fellow, from the splint to which they are soldered. H, mental or splint band, with the end left up to show the manner of tying it. I, neck strap.

The splint should be made to fit well by bending, cutting off the edges and rounding them up smooth. When a tooth projects so as to keep the splint from fitting, a hole may be cut to let the tooth through, if the metal cannot be hammered out. This should all be done before taking the impression, as a well fitted cup assists greatly in this important matter.

(The adaptability of this splint is shown in the fact that the one from which the cut was taken had been used successfully on two different jaws, so unlike that the first was a quarter of an inch wider, where the ends of the splints rested, than the second. When fitting it to the second jaw, it was necessary to cut off a part of the right wing, to keep it clear of the corner of the mouth. This accounts for the difference in the width of the arches as seen in the cut. The indentations on the top of the splint were made by the boys in eating.)

After the *cast* is obtained, the handle in front should be cut off, and the wings, *if needed*, soldered on, care being taken that their edges are clear of the corners of the mouth, when *open*. Warm gutta-percha should then be placed in the splint, pressed down on the cast, and, after cooling it in water, dig out the softened plaster.

If the splint is found to rock on the teeth, it should be removed, a *little warm* (not hot) *water* be poured into the lining, then carefully replaced upon the teeth, and slightly pressed down. It will then fit perfectly. This lining will be of such form that it will come off the teeth readily, therefore the jaw can be examined when desirable.

The gutta-percha could be placed in the splint and applied *directly* to the teeth and gum, if the jaw is set *sufficiently firm*, as there would be no difficulty in drawing the lining off before it was cold, to remove the ligatures. But if they are put on so as to keep clear of the gum, they might be left during treatment, as the lining would prevent them from moving the teeth.

If the jaw retains its place when the gutta-percha is pressed down, the splint might be *left* on. In this way the gutta-percha, by embracing the teeth, and fitting in between them, would hold the fragments of the jaw firmly in place.

It is, however, much more difficult to apply gutta-percha than wax, as it requires more heat and pressure.

When the jaw can just be held in place, and will bear with but little pressure, hardly that of warm wax, plaster of Paris might be used as a lining. In many cases it would hold the fragments in the splint for a long time.

This splint can be used without wings, in any way that Fig. 1 will answer.

The mental or splint band must be used when there are no teeth suitable to fasten to. This is frequently the case in children. This band may be removed for washing when necessary, care being taken that the patient keeps the jaws closed during the removal, in the earlier stages of treatment.

The splint has so far been spoken of in its adaptation to fractures in which the jaw is allowed to *move*. It can also be used instead of Figs. 2 and 3, by soldering suitable portions of another splint on the upper part, to hold the lining for the upper teeth. When the teeth are not fit for screws, the cap of Fig. 3 could be used, with long tapes to reach down to the wings beside the lower jaw, if a ready-made lower wing could not be fitted so as to act in place of an upper one.

No care will keep this splint as pleasant as one made of rubber. Gutta-percha absorbs, and becomes very offensive, but the small quantity used for lining the splint is protected and covered so that, with great cleanliness, it may be worn with little annoyance.

This splint has the advantage of being easier of application, and can be applied, if ready made, in much shorter time than a rubber splint.

In fractures treated with either kind of splint, the trouble and anxiety are over when the splint is on, as there is then no chance for the jaw to get misplaced.

In ordinary cases the splints may be removed during the first three days, if any edge is pressing so much into the gum as to be painful. With proper care in the fitting this will be unnecessary.

These splints hold the fragments so well together that I have seen badly lacerated gums heal up, in from two to three days, so perfectly that the fractures were then only simple.

No bad effects are produced by splints covering the teeth and gum. On the contrary, teeth that are so much loosened by the injury as to be beyond recovery in the usual treatment, are securely held by the splint and become firm again. The gum looks red and soft while the splint is worn, but a short period suffices for its complete restoration, even when it has been covered up for months. I generally leave the splint on long enough to feel assured that temporary removal will not endanger the union, which is very delicate for some time. How soon this will be, after the first application of the splint, and how long before the splint can be dispensed with, depend upon the gravity of the injury and the state and age of the patient.

With the fragments held in place, little apprehension need be felt of those painful abscesses, exfoliations and other complications so often present in the usual treatment. The advantages of splints over bandages are so great that nothing but experience will give a full appreciation of them to any one. I am able to speak positively upon this point, as nearly all the cases treated by me had been found unmanageable by the old methods, before coming under my care, and some of them were gravely complicated.

Examples in illustration will be given in the next number of this Journal.

(To be continued.)

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Medical Electricity: Embracing Electro-Physiology and Electricity as a Therapeutic, with Special Reference to Practical Medicine, showing the most approved Apparatus, Methods and Rules for the Medical Uses of Electricity in the Treatment of Nervous Diseases. By Alfred C. Garratt, M.D., Fellow of the Massachusetts Medical Society, Member of the American Medical Association. Third edition, revised and illustrated. Philadelphia: J. B. Lippincott & Co. 1866: pp. 1103.

If there is any one quality which Dr. Garratt's style possesses in excess of any other it is that of diffuseness. Comprehensive as is the title he has adopted for his book, it does not indicate one-fourth of the subjects he has deemed it expedient to treat of in this bulky volume. From astronomy to physics, from meteorology to anatomy, from chemistry to political economy, from physiology to moral science, from religion to ethnology, from hygiene to geology, from almost every other science to some other which has no apposite relation with it, he rambles in the most obscure and devious manner which it has ever been our misfortune to encounter in any work professing to be scientific. If Dr. Garratt had taken the common-place book of some young school girl, and transferred the contents to the ponderous tome before us, we could not have a more incongruous and wishy-washy mass of superficialities than he has presented to the medical profession and the public as a treatise on medical electricity. It is impossible to read a page without being struck by the fact that, however skillful a physician Dr. Garratt may be, he is one of the most incompetent and provoking authors that ever conceived the idea of inflicting a book upon the world. Not only is his style vicious in the way we have indicated, but he insults his reader with the puerility of constantly using italic letters with which to express the most insignificant ideas, and indulges in the frequent use of slang without contributing in the slightest degree to the force of his language.

A few extracts will convince our readers that in what we have said we have not done Dr. Garratt injustice. Taking the first page of his treatise, in the very beginning of his description of natural electricity, we find the following statement. Speaking of positive and negative electricity he says:

"Although ever tending to obtain a counterpoise for a rest, yet as easily and perpetually are these two electricities unbalanced, even so sure as our revolving globe receives her accession, duration and declination of solar rays. So also whatever disturbs any molecule of matter, fluid or solid, as heat, friction or chemical action, as also magnetism and vitality, liberates *active electricity.* The relative greatness of quantity and of tension of the given electricity varies even to the greatest extreme, according to its source, but its nature is always one and the same." If the medical students for whom this book is professedly written can understand a very simple fact from the account given of it by Dr. Garratt, we give them credit for a very remarkable degree of acuteness of perception.

The following is the next paragraph:

"It is presumed that every intelligent practitioner of medicine, in these days, understands the fundamental laws of electricity; but the author makes here a free and easy rehearsal of so much of those *laws* and *conditions,* to which in its respective forms electricity is obedient while acting upon or traversing through the different living tissues of the human organism, as will prove a sufficient *vade mecum,* in its department, for ready reference to the working practitioner. Certainly no conscientious and high minded person would be willing to attempt to employ this powerful agent in any form on the human body, *actively,* as a remedy, and much less as a trifling experiment, without first being familiar, at least, with the outlines of its sources, its properties, its actions and its results." If Dr. Garratt had tried to write the above two sentences in the worst possible manner we do not believe he would have met with greater success than has attended his effort to write them correctly. He seems to have no idea of the proper arrangement of the parts of a sentence, or of the power of the words which enter into its composition.

In regard to the thermo-electric pile of Nobili, Dr. Garratt tells us that—

"M. Melloni improved this by composing a pile of some fifty small and slender bars of bismuth and antimony of about two inches in length, so soldered together alternately and folded back and forth upon itself as to form a very small compact cube or block by means of insulating wax, or shellac, for filling the vacancies between the bars, which must touch only at their solderings."

We should like to see any one attempt to construct a thermo-electric pile after the above formula. The pile composed of "bars of antimony and bismuth," "by means of insulating wax or shellac," would be quite a curiosity in physical science. The bars, too, folded back and forth upon "itself" would present a problem capable of tasking the utmost power of grammarians to solve. Dr. Garratt then directs that the face of the instrument "must be kept at an *ambient* temperature." Why he should thus express himself we cannot possibly conceive, unless he was desirous of mystifying the whole affair. The expression is in bad English and it teaches erroneous ideas. One more passage from this section and we are done with it. If any of our readers can unravel the mysteries of the following sentence they will be able to accomplish a task which we have found to be above our ability:

"The idea thus put forth by M. de la Rive and Dr. A. Smee, that atoms have an electric polarity, which they owe to a more or less rapid motion by rotation, leads us to think that if this facility for actual increase of rotation is truly augmented also by moderate heat, and at the same time it exalts their electric polarity, we may in some measure, and I think in a very satisfactory manner, account for what takes place in living bodies as electro-calorific phenomena, since this applies mostly to moist tissues or fluids."

After touching upon the different forms of electricity in several pages, every one of which contains some glaring error in grammar or science, Dr. Garratt proceeds to consider superficially the various kinds of clouds, the relation of meteorology to health, ozone, soils and intermittent fever, sewerage, the advantages of dry cellars, the connection existing between high altitudes and the color of the skin, etc., etc. On page 48 we have the following interesting bits of information, which are gems in their way, and which, for absurdity of statement and badness of grammar, it would be difficult to match:

"Such specimens of a noble physical and mental race are very noticeable to the traveler through all that extent of 'hill country' stretching from Maine through New Hampshire and Vermont down to the southwestern slopes of the Green Mountains into Berkshire County of our own Massachusetts. Indeed, during the summer months, my own family seek this peculiarly delightful, dry, salubrious atmosphere, and the plain farmer's fare, among these hills on Winchendon Common, in sight of the grim old Monadnock Mountain, and thus uniformly cumulate health and strength while away from their city home. Thousands from our cities, during summer, wisely seek the atmospheric luxury of these young mountains in Ringe, Jaffrey, Bethlehem, Keene, Royalston, Clarendon, and Jefferson. Here the nights are cool, but not chilly; the days bright and breezy. The water is from magnesian beds of marble—cool, brilliant and sparkling springs; the air so clear that speech is easy and musical. Fogs are only seen below on the low lands and in the distant valleys, whence come the scream of the railroad whistle and the hum of the busy factory villages. Chilly nights and sultry days are only found there and in the gorges of the greater mountains above, far away to the north. A residence as elevated as this, if at the base of a still higher mountain, is subject to fogs, damp air, chilly nights, and sultry days."

We have only reached the 48th page, and there are yet 1055 to notice. Passing over all that relate to the history of medical electricity, electro-physiology and electrical instruments, we come, at page 391, to "Methods and Rules for the Employment of Electricity." Here we have no very great fault to find with Dr. Garratt's facts; the defects of his style are, however, as glaring as in the previous pages. We must, however, express our doubts as to Dr. Garratt's ability to "electrify the base of the brain, the medulla oblongata, and the great nervous centre generally." An electrical current passed through the spinal cord would—as every one knows who has ever seen the experiment tried on a decapitated frog—throw almost every muscle of the body into contractions. Such an operation can only be performed by putting the poles in actual contact with the cord, or else in much greater proximity to it than can be obtained in the living human subject. In treating of electrical excitation of the organs of sight, Dr. Garratt fails to point out the great danger of overstimulating the optic nerve, by the application of the direct galvanic current to the eyes or to any part of the face supplied by the fifth pair of nerves.

At page 472 Dr. Garratt reaches the treatment of diseases by electricity. In this the last part of the work there are so many misstatements, so much incongruous matter and so little that is valuable, that it is disheartening and wearying to turn over the pages. According to the author there is scarcely a disease that may not be benefited by electricity, but when we come to sift his statements we find a mass of generalities which really amount to nothing. Witness the following statement in regard to the treatment of delirium tremens by the agent in question. It is put, as our readers will perceive, in Dr. Garratt's usual obscure and ungrammatical manner.

"Electricity, in some of these cases, aids to these ends most marvelously, by planting the positive sponge at the base of the occiput while the negative is at the base of the stomach, and allowed to run continuously for a quarter or half an hour. For this the primary current, twenty-five cups, is best; or the extra current, good strength; or the faradaic current; all the patient will be quiet under."

Trichinosis is discussed under the name of "Flesh-Worm Palsy," and the trichinæ are called "horrible and '*mighty little*' worms."

Poisoning by lead, arsenical wall-paper, corrosive sublimate, etc., are touched upon, and the case reported a few years since by Prof. Christopher Johnston, of Baltimore, in which iron in fine powder and gold leaf were successfully administered as antidotes to corrosive sublimate, is given at some length. Dr. Garratt, however, shows his ignorance of the first principles of chemistry, when he designates the metallic iron reduced from its oxide *by hydrogen* as "iron bi-hydrogen."

Then we have feigned diseases, sea-sickness, cold feet and hands, alcohol and tobacco considered in Dr. Garratt's peculiar manner. For the information of those of our readers who use the latter substance we quote the following paragraph:

"*The manner* of smoking produces the greatest difference in effects. Those who smoke two-thirds of a Manilla, or who use clean, long pipes of clay, feel only the gaseous properties, and the free carbon. Wooden pipes and pipes with glass or porcelain stems are injurious; but cigars smoked *to the last end* are most injurious of all. To be safe, a good cigar should be cast aside as soon as it is half smoked. Leaf tobacco, with a 'long clay' pipe, is the most simple and safe sort of smoking. The next most wholesome pipe is the celebrated *meerschaum* bowl, with an amber mouth-piece and *a clay, porous stem* that is adjustable. This latter should be often replaced by a new one."

Passing over other points in the above quotation we have two questions to ask: 1st. Why should a good cigar be safe after it is half smoked and cast aside? 2d. What is "*long clay?*" There is some mystery about "*long clay*" which we are anxious to unravel. Dr. Garratt prints the words in italics and with quotation marks. What other author has refered to this substance?

In the orthography of proper names Dr. Garratt is as independent as he is in grammar. Thus we have *Altheus* for Althaus, *Dubois Reymond* for Du Bois-Reymond, *Carden* for Cardan, *Amusatt* for Amusat, *Whithouse* for Whitehouse, *Hyrtle* for Hyrtl, *Bourdeaux* for Bordeaux, *Stillie* for Stillé, *Beals* for Beall, *Romburg* for Romberg, *Perera* for Pereira, *Bunce* Jones for Benee Jones, etc., etc.

We cannot undertake to follow Dr. Garratt through all the pages of his book. Life is too short for such an undertaking, and our readers must already have had ample evidence that it would be a waste of time to dwell at greater length upon his lucubrations. In a work as large as the one before us it could scarcely happen that there should be an entire absence of valuable matter. Nearly all, however, that has any worth is derived from the writings of other authors, and might have been stated with infinitely more clearness in a volume one fourth the size of Dr. Garratt's. With the child who, after great difficulty and a great length of time, had finally succeeded in learning the first letter of the alphabet, we doubt whether it is worth while going through so much to learn so little. Books like Dr. Garratt's are a positive injury to science. A worse one than his it has rarely been our lot to peruse, and we hope the time is far distant when such eminent publishers as Lippincott & Co. will inflict upon us another as bad in composition and as erroneous in its teachings as the one we have felt it our duty to bring to the notice of our readers.

Medical Recollections of the Army of the Potomac. By Jonathan Letterman, M.D., late Surgeon U. S. A. and Medical Director of the Army of the Potomac. New York: D. Appleton & Co. 8vo., pp. 194.

Under the modest title of "Recollections of the Army of the Potomac," Dr. Letterman here places on record an account of the various and important improvements which were instituted by him in the organization and appointment of the medical department of that army. 'Tis well that he has done so, for we regret to notice a disposition manifested in certain high quarters to ignore his claims, or, at all events, a hesitancy and tardiness in acknowledging them, which is any thing but creditable. By reason of native modesty, Dr. Letterman has made his narrative too unassuming; but of one thing he may be assured, that though he may fail to receive a proper recognition from the authorities that be, his claims will never be forgotten by the thousands of sick and wounded who experienced the benefits of the provision inaugurated by him for their care and comfort; by the many officials, military as well as medical, with whom he was brought into relations, official or otherwise, and who were cognizant of his untiring efforts in the improvement of his department; nor by that large body of civilians who, visiting the army at various times and for different purposes, saw for themselves what was doing for the welfare of those so unfortunate as to need medical or surgical attention.

From personal observation and experience in the Army of the Potomac, we unhesitatingly assert that to Dr. Letterman (acting, of course, under advice from the then Surgeon-General, Dr. W. A. Hammond), more than to any other one man, is the army indebted for those radical improvements which brought up the medical department to that thoroughly organized and perfected condition which won so many and well deserved encomiums from the military and medical authorities, not alone of our own, but of other countries, and which enables us to say that never in the whole history of warfare were the sick and wounded so admirably and abundantly provided for as in the armies of the United States during the later years of the war of the rebellion.

The principal and most important changes introduced by Dr. Letterman were: 1st. The establishment of an ambulance corps. 2d. The method of furnishing medical supplies by brigades. 3d. The establishment of a system of field hospitals by divisions. 4th. Inaugurating a thorough plan of inspections for armies in the field. The details of these changes in the order in which they were introduced, the various circulars and instructions issued to the corps directors and other subordinate officers in announcing these changes, and the gradual improvement in their working, are all given by Dr. Letterman in his narrative, which, as it covers a period of eighteen months, dating from the close of the ever memorable seven days' fight in front of Richmond, affords him ample opportunity to describe the practical workings of his systems, as exemplified in the important battles of South Mountain, Antietam, Fredericksburg, Chancellorsville, the Wilderness and Gettysburg, besides other smaller engagements. We have no space to examine these changes, or to show their improvement upon the older plans, which were relics of a former century, and beyond which the conservatism—'twould be disrespectful to call it "old fogyism"—of our older regular surgeons could not or would not look. Fortunately our younger men came into control and expanded their ideas to equal our emergencies, and most of us are now familiar with the most magnificent system of provision for the sick and wounded of armies and the amelioration of their condition that the world has ever seen. To those who are not thus familiar we earnestly recommend the study as of inestimable value, and an historical narrative like this of Dr. Letterman is unquestionably more pleasing to the general reader than a formal and labored treatise on the subject. We regret, however, that the book is not more forcible and striking, as well as more extended, for the material was certainly at hand, and could have been incorporated in the work, to make it a standard of authority in all matters pertaining to the care of the sick and wounded and the executive details of the medical department of armies in the field; and, again, being no longer an officer of the army, Dr. Letterman was freed from that embarrassing restraint—the deference to higher authorities—which so many of us have experienced, and which so often curtails healthy and commendable criticism. He could thus have commented more freely on the obstacles he was obliged to contend with in the inauguration and carrying into effect of his plans, and contended more forcibly for the more complete independence of the medical department, and the necessity for their absolute control over their means of transportation, equipment and supplies—a concession that military men, as a rule, are unwilling to make, but which experieuce and the best judgment of the most far seeing medical minds point to as the only true and efficacious plan.

We invite especial àttention to those portions of the book that relate to the duties of medical officers. Here Dr. Letterman is very explicit, and justly so; for, as a rule, the most crude and inexcusably mistaken notions are entertained on this subject, both by civilians and military men. "It is a popular delusion," he says, "that the highest duties of medical officers are performed in prescribing a drug or amputating a limb." But we think, with him, that the "corps of medical officers was not established solely for the purpose of attending the wounded and sick; their labors cover a more extended field. The leading idea, which should be constantly kept in view, is to strengthen the hands of the commanding general, by keeping his army in the most vigorous health, thus renderiug it in the highest degree efficient for enduring fatigue and privation and for fighting. In this view the duties of such a corps are of vital importance to the success of an army, and commanders seldom appreciate the full effect of their proper fulfillment." We can ourselves call to mind instances, in the earlier part of the war, where efforts conscientiously made to accomplish this very purpose were looked upon by commanding officers (not alone the newly appointed, who attach an undue importance to their authority, and are excusable on the ground of ignorance, but those grown gray in the service and who ought to have known better) with such a marked jealousy and intolerance at the presumed interference with their reserved rights, as would have been puerile were it not criminal in the consequences to the health and life of the soldier. The great truth that the prevention of disease is the highest object of medical science, forms the postulate from which the army surgeon should deduce his whole plan of action; and yet there are commanding officers, incredible as it may seem, to whom this maxim is utterly devoid of significance. If Dr. Letterman, by his timely and sensible advice, succeeds in bringing home to their perceptions a realization of its importance, he will in this alone have accomplished a notable work.

Dr. Letterman accords full and cheerful acknowledgment of the great value of the services of his numerous colleagues in the medical department, and mentions by name the most distinguished. The whole book (which may be considered a graceful and affectionate tribute to the zeal and ability of the many who "evinced their devotion to their country and to the cause of humanity without hope of promotion or expectation of reward") is written in a pleasing style, and will awaken many kindly associations in the memories of those who shared with our author the varying fortunes of the "dear old Army of the Potomac."

Why Not? A Book for Every Woman. The Prize Essay to which the American Medical Association Awarded the Gold Medal in 1865. By Horatio Robinson Storer, M.D., Professor of Obstetrics and Diseases of Women in the Berkshire Medical College. Issued for General Circulation, by order of the American Medical Association. Boston: Lee & Shepard. 1866. 16mo, pp. 91.

The American Medical Association have done a good work in authorizing the issue of this essay for general circulation. To the majority of medical men of any large experience of course the subject is sufficiently familiar, and the evils of forced abortions, independently of the moral obliquity of the act, are well known. But those most directly interested—the women of the country—are, as a rule, ignorant of their evil effects, and all the influence of their medical advisers has hitherto proved ineffectual to put a stop to the lamentable and criminal sacrifice of fœtal life. Curiously enough, any moral considerations of the question have little or no weight with those determined to prevent any further increase of their families—for it is among the married that the practice obtains to the largest degree—and it is only by direct appeals to the common sense of females, and by convincing proofs of the long train of diseases that are so sure to follow this unnatural crime, that any good results can be hoped for. This point Dr. Storer has forcibly considered, and placed the matter in its true light so far as relates to the subjects themselves. The opinion has somehow gained credence that induced abortions are not unfrequently effected by the better class of physicians. Dr. Storer, while repudiating this gross misrepresentation, and claiming that physicians are unanimous as to the sanctity of fœtal life, admits that they have to a certain extent innocently and unintentionally given grounds for the prevalent ignorance on this subject, and lays down as a fundamental principle that abortion, no matter how indicated, should never be induced by a physician upon his own uncorroborated opinion. The law should provide this safeguard against the destruction of fœtal life. As in insanity, where, in some of our States, the certificate of at least two physicians is required before a legal commitment to the asylum can be obtained, so here the law should provide at once the safeguard against the destruction of fœtal life, and extend to the physician its protection against the claims of pity, or personal sympathy, or importunate entreaty, to say nothing of direct offer of comparatively enormous compensation.

We cannot follow Dr. Storer in his arguments. They are so concisely stated that to give even a fair exposition of them would necessitate the quotation of a large part of the work. But we earnestly recommend each one of our readers to peruse the book himself, and to aid in its circulation among those for whom it is expressly intended. The *ad captandum* title of the book, and the somewhat exuberant and flowery style in which it is written, are objectionable; but these faults are readily forgiven in considering the immense importance of the subject and the really valuable material that the author has collated. The book is issued in good style, with superior paper, print and binding, and is a credit to the publishers.

The Medical Register of the City of New York, for the Year commencing June 1, 1866. Published under the Supervision of the "New York Medico-Historical Society." Guido Furman, M.D., Editor.

We welcome the appearance of this little annual, which has now become almost indispensable to every city practitioner, for we know of no other accessible source where so much interesting and useful information is to be obtained as here. Several important improvements and additions are made to this year's issue, which increase materially the value of the book. The list of practitioners is far more complete than hitherto; our Brooklyn confreres are also included. The officers and members of the various County Medical Societies of the State are given, and the list of public institutions is more extended than last year. The obituary notices are exact, well prepared, and sufficiently minute. The substitution of "running titles" for the monotonous headings of last year improves the appearance of the volume, and adds greatly to one's convenience in consulting it, and the whole mechanical execution is very creditable to the press from whence it issues. We congratulate Dr. Furman and his associates on the success of their labors, and trust that the gentle hint conveyed in the editor's preface as to increasing the price of any subsequent issues will not deter a single one of the profession from continuing their patronage in such substantial shape that the enterprise shall be abundantly sustained, and that each succeeding year will place on our office tables a new edition of this valuable and now almost necessary hand-book.

REPORTS ON THE PROGRESS OF MEDICINE.

I.—THEORY AND PRACTICE OF MEDICINE.

(Continued from page 396.)

12. *General Emphysema Complicating Pertussis.* Reported by Dr. Burtaum. (Journ. fur Kinderkr.; L'Union Médicale, Sept. 5, 1865.)

Dr. B. was called to a child of three years about four weeks after the commencement of a pertussis, which showed nothing unusual until ten days before Dr. B.'s visit, excepting that the expirations were very jerking. On that day, which was the 2d of March, the patient lost his appetite, was morose, feverish and somnolent. The tongue was covered by a whitish coat, and mucous râles were developed in the lungs.

The emphysema came on very soon after this, and when Dr. B. saw the child on the 12th of March he found the following condition: The right upper eyelid had a redish aspect, and was so much inflated that the eye could not be opened. The lower lid was equally inflated, but pale. On the left side the palpebral emphysema had so much subsided that the child could open the eye a little. The whole face was inflated and pale, the frontal and temporal regions were swollen, but on the other parts of the head the swelling had almost disappeared. The neck was very much inflated, the tumor being here most prominent.

All the anterior pectoral surface and the sides were largely inflated, as well as the belly and back, the tumor extending from the lowest cervical vertebra to the coccyx, but divided at the median line. The sternum and linea alba formed a furrow.

The abdominal tumor extended to the inguinal regions. But the most remarkable region of the emphysema was the scrotum, which was so large as to widely separate the thighs. It measured nine and a half inches transversely, was transparent, slightly elastic, and injected by numerous dark-red vascular ramifications. The penis was scarcely visible, and protruded only a quarter of an inch; the prepuce was corrugated, and the raphé formed a superficial gutter dividing the scrotal tumor into two equal parts.

The thighs were slightly inflated, as far down as the popliteal hollows; the knees were not involved.

Of the upper extremities the most considerable inflation extended to the radio-carpal articulations.

The tumor was everywhere soft, elastic, crepitant under pressure, not retaining the impression of the finger, and showing no change of color in any part, except the right superior eyelid and the scrotum.

At this time the child was still ill tempered, but no longer somnolent; the fever had diminished and the tongue was cleaned, but the appetite was slight, the bowels constipated, urine scanty and turbid. Respiration was tranquil, with no dyspnœa. Percussion gave a tympanitic sound, auscultation revealed only a puerile respiration without râles, but the pressure of the face against the external emphysematous parts caused crepitation under the ear.

The treatment consisted of the internal use of large doses of acetate of potassa, frictions with camphorated liniment, and envelopment of the scrotum in cushions containing discutients. The urine recovered its normal appearance after the use of parsley water.

The scrotum was afterwards fomented with aromatic spices and chamomile flowers.

The cure was rapid and complete.

13. *Acute Uncomplicated Myocarditis Diagnosticated during Life.* (Medical Press and Circular, Feb. 7, 1866.)

Dr. Radcliffe reports a case of this very unusual affection, of which we have little, if any, positive knowledge. Dr. Stokes, of Dublin, who was the first to describe this disease, met with but a single case, in which the post mortem appearances were quite similar to those observed in Radcliffe's case. Watson does not even mention the disease; Bennet merely alludes to it as "one of the rarest organic diseases known;" and Bellingham says it is scarcely ever met with as a solitary disease, being always associated with pericarditis or endocarditis, sometimes in addition with pneumonia or pleuritis. He also asserts that there are no symptoms which can be said to be pathognomonic of myocarditis. The case is so instructive that we copy the history in detail.

The patient was a fine, stout, strong, married man, middle aged, a varnish maker by occupation. For six weeks he had occasional attacks of sharp pain at the pit of the stomach, and shooting thence into the left arm—attacks evidently of the nature of angina pectoris. In other respects he thought himself well in health, and he was well enough to follow his daily work, and to get about with little or no discomfort up to the day before his death.

When seen for the first time (July 27th, 1865), the indications of the disorder evidently pointed to a very weak heart. The pulse was extremely feeble and somewhat slow, but not irregular. The hands were cold and clammy—remarkably so. The first sound of the heart was absent. The cardiac impulse against the walls of the chest could not be felt. The second sound of the heart could be heard, but faintly only, and several times (in an examination extending over several minutes) it was distinctly reduplicated. There were no morbid sounds of any kind whatever. In the attempt to detect the cardiac impulse the patient winced more than once, and complained of feeling sore and tender at the part. There was no arcus senilis; the arteries were to all appearance free from atheromatous deposits, and, in short, the only indications of physical disorder were those which have been mentioned. The first attack of pain happened at a time of sudden and severe mental trouble. Previous to this the health had been in all respects excellent.

The patient was seen for the second time on the following day, and then he was dying. He was sitting awkwardly on the edge of a chair by the side of the bed, supported by his wife. On suggesting that his posture was a very uncomfortable one, he gasped out, "I must keep as I am—I dare not stir." He had been in this position for ten or twelve hours, literally without moving in the least. His face was pale and ghastly; large beads of sweat stood out on the forehead and went trickling down the face; his extremities, upper and lower, were clammy and corpse-like as to paleness and coldness. The pulse at the wrist had failed altogether. His breathing was short, shallow and gasping, and with it was a rattle, of which the significance could not be mistaken. His mind was clear and collected; he complained of sickness, and said he knew that he was dying.

The history given of this sudden change was this: that he got out of bed to pass urine in the middle of the night, after several hours' quiet sleep; and that while up for this purpose the pain in the pit of the stomach returned in an unusually severe form, with cold perspirations and with a feeling of deadly faintness. For the next four hours this pain continued without intermission, even without alleviation, and then it ceased suddenly, and the condition as suddenly changed to that which has been described.

The post mortem examination was made by Dr. Willis and Dr. Bazire, twenty-four hours after death. In the cavity of the pericardium were nearly two ounces of serum, reddened by blood, but having no flakes of lymph in suspension. The pericardium itself presented no traces of inflammation, old or new; its visceral layer was intensely injected with ramifying capillaries filled with dark blood, but without echymoses, and elsewhere it was of the natural color and character. The heart was dilated and flabby. The muscular structure of both ventricles, and in a lesser degree of both auricles also, was soft and friable, of a mulberry-juice color, almost black in fact, contrasting in this respect, in a very marked manner, with the natural redness of the muscles of the chest-walls. It broke down readily under the finger, like hepatized lung. As seen with the naked eye, it did not appear to be fatty, but there were considerable deposits of fat about the exterior of the heart. The endocardium and all the valves were quite healthy, and so also was the aorta. The left ventricle contained some loose, very dark clots of semi-coagulated blood; and in the right ventricle were some fibrinous, but not decolorized, clots adherent to the walls. Upon lifting up the heart by a portion of the right ventricle, the muscular structure broke down, and tore like wet paper by the weight of the heart itself. Unfortunately no microscopic examination was practicable.

The grounds upon which the diagnosis was made were in the main these: The history of the disease seemed to point to acute rather than to chronic disease—to begin suddenly in a way which suggested the idea of a "broken heart." There was no sufficient reason to suspect pericarditis or endocarditis, for there were none of the morbid sounds which mark the presence of these inflammations. So far it seemed plain enough. It seemed, moreover, that the main symptoms were easily explainable on the supposition that the muscular structure of the heart had been attacked by inflammation. Inflammation of the muscular structure of the heart, as a matter of course, would weaken the muscular powers of the structure, and this weakening would account for that failure in the action of the heart which was the most prominent symptom. Moreover, the same weakening would carry along with it, if sufficient in degree, absence of the first cardiac sound, and absence likewise of the usual cardiac impulse. Nay, it seemed as if the symptoms present—sudden failure in the action of the heart, with loss of its first sound and of the impulse of the apex, with some tenderness on pressure in the intercostal spaces in the cardiac region, with some pain, but without the severe pain of pericarditis, without the morbid sounds of pericarditis or endocarditis, and without arcus senilis, atheromatous vessels, or other signs, good or bad, to point to common fatty heart—were all the symptoms and signs one had a right to expect in inflammation of the muscular structure of the heart.

14. *Purpura Hæmorrhagica, following Scarlatina.* (Lancet, Jan. 20, 1866.)

Mary Ann R., an exceedingly well developed little girl, aged about four years, was attacked with the usual symptoms of scarlatina on the 18th of November, 1865. The throat was much inflamed, and diarrhœa persistent throughout. About the sixth day erysipelas appeared around the left eye, and terminated in suppuration. After a most severe attack she slowly approached convalescence, but could only with great difficulty be induced to take small quantities of stimulants and nutriment.

At nine, A. M., of Dec. 10th, she was suddenly attacked with vomiting of blood, with bleeding from the nose and the abscess beneath the eye. From the loud râle heard in respiration there was also evidently hemorrhage from the lungs. The feces were bloody; but the urine could not be examined. Hemorrhage continued with slight intermissions, in spite of all treatment, for more than seven hours, when death closed the scene. There appeared numerous but rather small echymoses upon the chest, abdomen and back; but none upon the extremities. No post mortem examination was allowed. There had been no dropsy or nephritis in this case.

Mr. Kettle, who reports this case, remarks that he has never seen, heard, or read of a similar case, although aware of its occurrence after typhoid and other fevers of a low grade.

15. *The Thermometer in Diagnosis.* (Medical Times and Gazette, June 23, 1866.)

The diseases at present known to be able to cause a continued elevation of the temperature of the body for a month or more are tuberculosis, rheumatism, ague, abscesses, suppuration (such as occurs in empyema, large, open psoas abscesses, &c.), and certain forms of chronic induration of the lung with ulceration of the bronchi and the formation of cavities. With the exception of tuberculosis, all these diseases are accompanied by such characteristic symptoms that we usually have no difficulty in forming a correct diagnosis. The chronic induration of the lungs alone closely simulates tuberculosis, and we hope to soon be able to show that by means of the temperature this disease can be correctly diagnosticated and distinguished from tubercular disease of the lungs. Tuberculosis of the lungs or other organs of the body may exist, as we know, without any physical signs being present, while the rational symptoms may be very slight and insufficient for a correct diagnosis. If, then, we have a daily elevation of the temperature for more than a month, and this be not due to the diseases noted above as of easy diagnosis, we are justified in considering such elevation to be due to a tubercular deposit in the body.

In connection with the above remarks, which are a brief abstract only of the paper in the *Medical Times and Gazette*, the propositions laid down by Dr. Ringer, in his recent work on this subject, and which has not yet been republished in this country, may be of interest to our readers.

1. There is probably a continued elevation of the body in all cases in which a deposition of tubercle is taking place in any of its organs.

2. This elevation of temperature is probably due either to the general condition of the body (tuberculosis) or to the deposition of tubercle in its various organs (tuberculization).

3. This elevation is probably due to the general condition (tuberculosis) rather than to the deposition of the tubercle (tuberculization).

4. The temperature may be taken as a measure of the amount of the tuberculosis and tuberculization, and any fluctuations in the temperature indicate corresponding fluctuations in the severity of the disease.

5. The temperature is a more accurate indication of the amount of tuberculosis and tuberculization than either the physical signs or the symptoms.

6. By means of the temperature we can diagnosticate tuberculosis and tuberculization long before the physical signs and symptoms are sufficient to justify such a diagnosis.

7. By means of the temperature we can diagnosticate tuberculosis even when during the whole course of the disease there are no physical signs indicative of tubercular deposit in any of the organs of the body, and in which cases the symptoms (apart from the temperature) are inadequate to enable us to arrive at such a diagnosis.

8. It is probable that by means of the temperature we can conclude that the deposition of tubercle has ceased, and that any physical signs that are present are due to obsolescent tubercle and the chronic thickening of lung tissue between the tubercular deposit.

9. It is probable, though further observations on this point are necessary, that the temperature of the body affords a means by which we can diagnosticate between diseases in which the symptoms and physical signs are either too scanty or too much alike to enable us to decide between them.

SUMMARY.—*Observations on the Present Epidemic of Typhus Fever.* By ROBERT PERRY, M.D. (The Glasgow Medical Journal, January, 1866.)

Dr. Perry here gives an interesting paper which he read before the Glasgow Medical Society in December, 1865. The whole article is replete with important observations and contains statistical tables of great value. Its length precludes any thing more than an allusion to the results of his treatment. To the use of the mineral acids so strongly recommended by Dr. Murchison and others, Dr. Perry attaches very little value. The results obtained from the employment of permanganate of potash were so unsatisfactory as to lead to a discontinuance of the remedy after its careful trial in a few cases. The use of the sulphites and hypo-sulphites, as first recommended by Polli, of Milan, met with but little better success, and Dr. P. is convinced that in all the cases in which he tried this remedy no amelioration of the disease was produced. Alcoholic stimulants he never uses as a routine treatment, nor is he guided in their use by the age of the patient; but judges each case by its particular requirements, and administers or withholds alcoholic stimulants accordingly. The conclusions which he arrives at on this point are almost identical with those so forcibly enunciated by Dr. Gairdner, of Glasgow, in his "Facts and Conclusions as to the Use of Alcoholic Stimulants in Typhus Fever."

Clinical Inquiries into the Influence of the Nervous System on the Production and Prevention of Dropsies and on the Means and Methods of Successful Treatment. By THOMAS LAYCOCK, M.D., Professor, etc., University of Edinburgh. (Edinburgh Medical Journal, March and April, 1866.

Following up a series of investigations which he began a few years since, and the results of which have already been given to the profession, Dr. Laycock here enunciates his views on the pathology of certain classes of dropsies, which are quite at variance with the hitherto generally accepted ideas on the subject, and, indeed, with the exception of Virchow, scarcely entertained by any of our modern pathologists. He analyzes carefully a number of cases in point, and submits the following propositions:

1. That the nervous system, as a whole, or else some special division of it, has a direct influence both on the production and prevention of anasarca. 2. That anasarca is produced when innervation is defective. 3. That anasarca is prevented being manifested locally when the general causes are in operation, by more vigorous because more healthy innervation of the exempted tissues. 4. That centric disease or disorder may have the double effect of facilitating the effusion in one lateral portion of the body and preventing it in the other lateral portion. 5. That production or prevention alike follow upon changes in the innervation, which are induced in the same way and according to the same laws as other neuroses; and finally, 6. That it is not the sensory, motor, or vaso-motor systems which are specially involved.

The Action of Fungi in the Production of Disease. By TILBURY FOX, M.D. (Edinburgh Medical Journal, April, 1866.)

A paper of interest in connection with the investigations of Dr. Salisbury, of Ohio, as related in the *American Journal of Medical Sciences*, 1865, and January, 1866.

On Rupture of the Heart. By A. Dunlop, M.D. (Edinburgh Medical Journal, May, 1866.)

Dr. Dunlop here gives an analysis of twenty-nine collected cases of this affection, from which it would seem, 1st. That fatty degeneration is the most common cause of spontaneous rupture of the heart. 2d. That death is, in the majority of cases, instantaneous. 3d. That in those cases where the patient has not died suddenly the symptoms have generally been oppression of the breathing and more or less severe pain in the chest, frequently of a paroxysmal character. 4th. That most of the deaths took place between the ages of seventy and eighty; and, 5th. That most of the patients have been females.

In speaking of the usual seat of the lesion, he remarks: "Bouillaud says that there are six ruptures of the left side of the heart to four of the right. Rokitansky states that the laceration is most commonly found in the left ventricle; that it is almost invariably in its convex or anterior wall, and generally near its middle, and close to the septum. Mr. Bayle, in the *Lancet* for September, 1824, states that out of nineteen cases which he had collected, the left ventricle was ruptured in fourteen, and generally on its anterior surface; the right ventricle was ruptured in three instances; in one case perforation took place at the apex, and in another the septum ventriculorum was ruptured. Laennec was of opinion that rupture occurs most frequently in the wall of the left ventricle, and that it rarely takes place at the apex. Out of fifty-two cases collected by Gluge, the left ventricle was the seat of the lesion in thirty-seven, the right ventricle in eight, the left auricle in three, the right auricle in two. Out of nine cases, mentioned by Dr. Aitken in his Practice of Physic, rupture occurred in the left ventricle in five; in three of these the laceration was across or along the anterior wall, and in the other two at the apex or in the posterior wall."

Two cases of rupture of the heart have recently occurred at St. George's Hospital, London, under the care of Dr. Barclay and Dr. Page. They are reported in the *Lancet* of July 21, 1866. The simultaneous occurrence of two cases of ruptured heart at the same hospital is a somewhat curious coincidence. In both these cases there was evident fatty degeneration of the muscular structure. It is worthy of note, too, that in both these instances the rupture was of the *right* ventricle and was *multiple.* Multiple rupture of the heart is rare. Ollivier states that it occurred in only eight of the forty-eight cases which he collected. Dr. Dunlop, in the article above noted, gives several cases from different sources.

On Prognosis in Heart Disease. By W. H. Broadbent, M.D. (British Medical Journal, June 9, 1865.)

On Mixed Types of Fever, in Relation to the Identity or Non-Identity of the Typhus and Typhoid Poisons. By Henry Kennedy, M.B. (Medical Press and Circular, June 20, 1866.)

Dr. Kennedy stoutly maintains that the poison of typhus is capable of engendering not only its own specific type of fever, but also that known as typhoid or enteric, as well as other types, such as nervous, gastric, cerebral, etc. He has previously published a large number of cases in the *Dublin Quarterly*, substantiating these views, and now brings forward an additional series of cases in proof of his position.

II.—OBSTETRICS AND DISEASES OF WOMEN.

1. *Forty Cases of Artificial Premature Labor.* (British and Foreign Medico-Chirurgical Review, Jan., 1866.)

Dr. Robert Barnes, in commenting on these cases, says that Kiwisch's method is so uncertain as to time, and moreover so disastrous in its results in many cases, that it ought henceforth to be abandoned. Krause's method on the whole appears the more certain and safe in ordinary use.

Dr. Simon Thomas, of Leyden, relates forty cases in which labor was artificially induced. The indications were chiefly contractions of the pelvis; and these were determined less by the histories of previous labors than by accurate measurements expressly made. Thus, in five cases, the patients were primiparæ. The first method employed was to place a bougie for a short time a a few inches between the uterus and membranes, changing it every day for a larger one. Labor only came on in ten days, and the forceps was used. In another case, Kiwisch's douche was used. Labor followed in five days. The mother died of pyæmia. In other cases the bougie was used, or the douche; generally days elapsed before labor. Afterwards Krause's method, the leaving an elastic catheter in the uterus, was used. The time expended was from six to ninety-two hours, the majority taking from twenty-four to forty-eight hours. Of the 32 children born after Krause's method, 25 lived; of the 32 mothers, 25 had a quite natural puerperal history; 4 died of pyæmia or endometritis.

2. *Double Uterus and Vagina.* (Idem, Jan., 1866.)

A healthy woman, aged twenty, was admitted in May, 1865, into the Town Hospital of Dresden, for blennorrhœa and excoriations of the vulva. She had menstruated since sixteen. The external genitals were normal, but the hymen was wanting. The vagina was double, the lower end of each half being provided with a hymen-like fold of mucous membrane. In the summit of each vagina was a small, firm vaginal portion of uterus, each possessing a small transverse os. The uterine sound passed freely into the left os uteri, but only slightly into the right, so that it remained doubtful whether the body of the uterus had two distinct cavities.

The *British Medical Journal*, of Feb. 10, 1866, gives, from the *Wiener Medizin. Wochenschr.*, another case of this unusual malformation, viz.:

At a meeting of the Medical Society in Vienna, Dr. Späth related the following case, which had recently come under his notice. A girl aged 18, primipara, was admitted into hospital. On examination, there was found to be a double os uteri, and the existence of a bilocular uterus was therefore suspected. After the first labor-pains had set in, the patient was seized with convulsions, which recurred, and ended fatally, in spite of the hypodermic injections of acetate of morphia. During life, it was found that both orifices were dilated, and gave the sensation of an os uteri divided by a band; this was divided by scissors, and the child was discovered presenting transversely. After death, the uterus was found to consist of two cavities, of which the right was somewhat larger than the left. In the septum was an opening, which, Drs. Rokitansky and Späth believed, had been formed during pregnancy. A corpus luteum was found in the left ovary.

Another interesting case of this malformation is given by Dr. A. B. Hoyt, in the *Boston Medical and Surgical Journal* for October 26, 1865.

The subject of it, aged 57 years, died of a cancerous tumor occupying the left iliac region. She has always been healthy until this disease made its appearance. She had given birth to three children; her labors were always severe—the last one unusually so; this occurred twenty years before her death. Her husband, during the patient's life, was ignorant of the fact that any unnatural condition existed. At the autopsy it was found that there were two vaginæ, about equal in size, the left one perhaps a little the largest, and similar as to walls, rugæ, etc. They extended from just within the vulva to the uterus, and were separated by an interval filled with compact cellular tissue. Close to the uterus the vaginæ communicated with each other through an opening of about one-fourth of an inch in diameter. From each vagina a probe passed into a separate uterine cavity. The os uteri in each vagina was small and imperfectly developed, as also was its orifice. The organ, as thus composed, was hardly larger than the normal uterus, but about one and a half inches from the os it bifurcated into two symmetrical cornua, as large round as the forefinger, and about one and a half inches long; these terminated in the Fallopian tubes, which, with the ovaries and broad ligament, were natural. There was but one ovary to each cornu. The cornua were covered with peritoneum, except where the two layers of the broad ligament separated, and it also covered what might be called the fundus of the compound portion of the uterus. There was nothing to indicate that one side of the uterus had been impregnated and not the other, unless it was the greater capacity of the left vagina.

3. *Apparent Vicarious Menstruation.* (British and Foreign Medico-Chirurgical Review, January, 1866.)

The subject of Mr. d'Andrade's case was a stout, healthy Parsee lady, aged eighteen. She had menstruated regularly from thirteen to fifteen and a half, when catamenia became first irregular, then ceased, being replaced by bleeding at the gums and nose, and vomiting of blood. Menstruation returned; no pregnancy. Mr. d'Andrade observed blood to ooze from the healthy skin of the left breast and of the right forearm. The blood exuded showed red and white globules under the microscope. The skin-hemorrhage recurred every month or two. Subsequently blood oozed from the forehead.

4. *Retained Catamenia from Imperforate Hymen.* (Boston Medical and Surgical Journal, June 21, 1866.)

Dr. H. C. Robbins, of Dement, Ill., describes the case of a young miss, æt. 15, who had never menstruated, but presented at intervals evidences of a menstrual molimen taking place without show. A catharto-emenagogue treatment was adopted, but without avail. A vaginal examination was then reluctantly consented to. The meatus urinarius was found projecting prominently beyond the labia. Between the labia was an oval fluctuating tumor, which proved to be the imperforate hymen. This was divided by a crucial incision, and a pint of dark, offensive blood, the accumulation of a year, was discharged, with the result of immediate relief to the patient.

5. *Retained Catamenia from Formation of Adventitious Membranes.* (Chicago Medical Journal, June, 1866.)

Dr. T. C. Robinson reports the case of a young lady, aged fifteen years, whose catamenia appeared in August, 1865, and continued regularly for four months. The cessation at that time was attributed to having taken a severe cold. Each month subsequently there were marked evidences of the menstrual molimen, but no discharge. In March, 1866, the patient was examined *per vaginam*, and the cause of the non-appearance of the catamenia was discovered. The external organs of generation were normal, the vagina small and contracted, and an inch and a half from its orifice was completely closed by a firm elastic membrane, forming a *cul de sac*, point upwards. This was ruptured, and a slight flow of blood took place, but with no relief to the excruciating pains from which the patient was suffering. Above the membrane the vagina was crossed by several fibrous bands, which were also divided. The uterus was then found to be largely distended, and the os uteri closed by a membrane similar to the one first discovered. Upon puncturing this with a catheter, about sixteen ounces of thick, dark colored, tenacious fluid escaped, and the girl was very shortly relieved of her sufferings. The regular recurrence of the catamenia for four months shows that the occlusion could not have been congenital, nor was there in the history of the case any thing to show that there had been any inflammation of the mucous surfaces—to which cause the formation of the membranes and bands was attributed.

6. *Retained Catamenia from Adhesive Inflammation of the Os Uteri.* (Chicago Medical Journal, August, 1866.)

At the July meeting of the Chicago Medical Society, Dr. Orrin Smith reported the case of a married woman who for two years had retained her catamenia. The molimen occurred regularly, and the abdomen was much enlarged. The speculum showed that the os uteri was closed by adhesion of the lips. The patient had been under treatment for ulceration of the os and cervix previous to the retention. A bougie was forced through the cicatrix covering the os and into the uterine cavity. Several pints of dark, grumous fluid were withdrawn. The patient made a good recovery, and is now menstruating in a normal manner.

7. *Quadruple Births.* (Lancet, May 26, 1866.)

Dr. Wilson, who reports the following case, states that of nearly 140,000 cases of accouchement related in the reports of the Dublin Lying-in Hospital, but a single case of quadruples is recorded.

"Mrs. M., aged thirty-eight, was seized with labor-pains about six A. M., and was attended by a midwife up to two P. M., having by that hour given birth to two full grown male children, both of whom were alive, and born with breech presentations. The midwife, being of opinion that a third child was yet to be born, thought it advisable that more assistance should be procured. On examining the patient I found the two placentæ united and not yet expelled; on making slight traction on the umbilical cords, both placentæ very easily came away. On examining the abdomen I at once ascertained that the whole of the contents of the uterus were not expelled, and, on exploring per vaginam, I discovered a third child, the head presenting. The uterine contractions coming on regularly and briskly, the woman, in two hours after the birth of the second child, was delivered of a third living child, a female, the third placenta following in a few minutes. On again examining I found that a fourth child existed. The uterine contractions recurring, the head rapidly descended, and in two hours after the birth of the third child the woman was safely delivered of a fourth, a female, who, on being born, showed slight symptoms of vitality; but my endeavors to resuscitate the feeble powers of life were unavailing. A few minutes afterwards the fourth placenta was expelled, and the uterus, being now freed of its contents, speedily contracted, and the well known tumor above the pubes was soon felt.

"The children were all mature, being about the average size of twins, well formed and healthy looking. The mother is a stout, compactly built, healthy and well formed person, of the sanguine temperament, and belonging to the seafaring population. Previous to this accouchement she had borne several children. She recovered speedily, and without an untoward symptom. She had always enjoyed excellent health, but, from the tremendous weight of the contents of the uterus at the latter part of this last pregnancy, was unable to be out of bed for a month previous to her confinement."

Dr. Frederick Baker very briefly reports, in the *Richmond Medical Journal* for June, 1866, the case of a colored woman whom he attended in confinement, with the unusual result of producing four children, three girls and a boy. Each child was contained in a distinct membranous sac, with its own liquor amnii, placenta and cord, and no communication between the different sacs. The children were perfectly developed but very small, and only lived a few hours. The same woman had previously borne twins twice, and this was her twelfth confinement, from which she made a good recovery.

8. *Mortality among Lying-in Women in the Parisian Hospitals.* (British Medical Journal, April 7, 1866.)

Statistics show that there have been in Paris hospitals, during the month of February, 597 accouchements and 53 deaths; in the Hôtel Dieu, 104 accouchements and 1 death; in the Lying-in Hospital, 74 accouchements and no less than 30 deaths! The frightful mortality which has so long distinguished the Maternité is arresting the attention of authorities. The statistics are as follows:

	Accouchements.	Deaths.
Beaujon	33	0
Hôtel Dieu	104	1
Saint Louis	77	1
Charité	42	1
Necker	30	1
Pitié	53	3

	Accouchements.	Deaths.
Cochin	34	3
St. Antoine	41	5
Cliniques	56	8
Maternité	74	30

M. Lefort has lately given some interesting statistics, based on a consideration of 1,800,000 accouchements. Of 888,312 women confined in the Paris hospitals, 30,594, or 1 in 29, died. Of 934,781 women confined in their own houses, 4,405 died, or 1 in 212. The cause of the great mortality in hospitals is puerperal fever.

The *Journal de Médecine et de Chirurgie Pratiques* for June, 1866, gives the following summary as the results of the lengthy and important discussion on this matter in the Society of Surgery in Paris. It is in the form announced by the Society.

"1. It is now fully demonstrated by statistical returns that puerperal affections are far more frequent, and the mortality much more considerable, in lying-in hospitals than elsewhere.

"2. The increased mortality, which sometimes reaches a formidable degree of intensity, and is habitually ascribed to the prevalence of epidemic disease, is almost exclusively referable to two causes, viz., the deleterious atmosphere of hospital wards, and perhaps the contagious character of puerperal affections.

"3. In addition to the general rules of hygiene applicable to all nosocomial institutions, and propounded by the Imperial Society of Surgery (December 14, 1864), the prophylaxy of puerperal diseases and of the mortality they induce, should be based on the measures calculated to counteract infection and avert contagion.

"4. In order to remove the chances of infection, the most minute and incessant attention to cleanliness is indispensable. When each bed of a ward shall have been occupied by a woman in labor, the ward should for a time be closed, well ventilated, and the walls and bedding thoroughly purified.

"5. Contagion is always to be dreaded in a hospital, and if it be found impracticable to allocate a separate room to every woman in labor, the wards should at least be thoroughly accessible to air, without direct communication with each other, and should contain no more than four beds.

"6. Any woman who presents symptoms of illness after delivery should at once be conveyed to a separate infirmary containing several rooms, each appropriated to one patient only, and attended by a staff of nurses distinct from those of the hospital.

"7. If, in spite of these precautions, a lying-in hospital should be threatened with infectious or contagious disease, all the inmates should as promptly as possible be sent away, and the entire establishment thoroughly cleansed and ventilated. As the medical officers of the institution are the only competent judges of the amount of the impending danger, and the removal of the inmates requires to be promptly effected, these officials should be invested with full authority in the matter.

"8. Lying-in hospitals should be small; being liable to be more or less frequently evacuated, a sufficient number of institutions should be constructed to secure admission to all who may require it. Although it is not of course possible to fix with absolute precision the number of the inmates, it would seem desirable not to exceed six or eight hundred confinements annually."

9. *Uterine Fibrous Tumors.* (Lancet, January 20, 1866.)

M. Kœberle has published an article on this subject in the *Gazette Médicale de Strasbourg.* After relating several cases he proposes the following rules:

1. Uterine fibrous tumors, which prove inconvenient by their size, the region wherein they are seated, or the symptoms to which they give rise, may be extirpated through the abdominal walls, when they threaten to shorten the patient's life, and whether the tumors are pedunculated or interstitial.

2. When the pedicle is narrow, the tumor may be removed after deligating the former. This operation, when carefully performed, presents the same risks as ovariotomy.

3. When the ligature must include the body of the uterus, or when the latter contains other fibrous nuclei, amputation of the uterus above the vagina should be performed, the complete extirpation of the organ being desirable. The ovaries and broad ligaments should likewise be removed—because they are no longer of any use; because their existence is a cause of periodical congestion, and of general uneasiness, and they may endanger the results of the operation; and, lastly, because the whole proceeding becomes thereby easier and less perilous.

4. The removal of uterine fibrous tumors is especially indicated in young women, with whom these growths increase rapidly, especially when they undermine the patient's health, when they give rise to dangerous hemorrhage, when they threaten to shorten life, or make patients miserable by the inconvenience, the unpleasant symptoms, or the infirmities they occasion.

The operation should be performed, if possible, before the health is considerably impaired, and before the tumor has acquired too large a size (say a diameter of eight or ten inches). The operation is counter-indicated when the adhesions are extensive, when the tumor is considered insusceptible of removal owing to its numerous connections, especially when lying on the broad ligament. or to increasing ascites, which on removal of the fluid has a tendency to re-form rapidly, to the existence of concomitant incurable affections, or circumstances which may interfere with the favorable results of the operation.

10. *Mortality of Childbirth as Affected by the Age of the Mother.* (British Medical Journal, February 10, 1866.)

The following are the chief conclusions on the subject arrived at by Dr. Matthews Duncan: 1. Youthfulness has less influence in producing mortality from parturition than elderliness. 2. From the earliest age of child-bearing there is a climax of diminishing puerperal mortality, succeeded by an anti-climax of puerperal mortality increasing till the end of child-bearing life. 3. The age of least mortality is near twenty-five years, and on each side of this age mortality gradually increases with the diminution or increase of age. 4. Above twenty-five years puerperal mortality increases at a much higher rate than it increases at corresponding periods below twenty-five years. 5. Though it is not deducible from any thing in this paper, it is too interesting to omit noticing that the age of greatest safety in parturition coincides with the age of greatest fecundity, and that during the whole of child-bearing life, safety in parturition appears to be directly as fecundity, and *vice versa.*

11. *Large Dermoid Cyst of the Ovary.* (Lancet, June 16, 1866.)

At the Middlesex Hospital, under the care of Mr. Moore, was a case of very unusual character and interest.

E. F., aged twenty-eight, married. Once pregnant, three years since, when she gave birth to a very small child. On admission (April 30th) she was suffering from acute peritonitis. There was enlargement of the lower three-fourths of the abdomen, caused by a prominent swelling, the greater part of which was pultaceous, the lower portion being firm and solid. Subcutaneous movable nodules were observed on each side, resembling in character enlarged glands, but extending nearly as high as the umbilical region. For the week previous to admission there had been purulent discharge from the navel.

May 1st. After a consultation, Mr. Moore made a cut about an inch and a half long above the navel, and immediately came down upon a large mass of mortar-like substance, contained in a large cyst between the peritoneum and the abdominal wall. Seven pounds and a half of this peculiar substance (which had most of the characters of the contents of a dermoid cyst) were then removed. The cyst was found to be divided by a septum, behind which there appeared to be still a considerable quantity of the same substance. It was decided that further exploration was unadvisable. The operation lasted upwards of an hour, and a tablespoon was required to scoop out the contents of the cyst. The wound was syringed out with a solution of chloride of zinc (forty grains to the ounce).

A tonic and stimulating plan of treatment was then adopted, but the patient gradually failed, and died seven days after the operation.

On post mortem examination an enormous cyst was found connected with the right ovary, and several others of smaller and varying dimensions scattered about the abdominal viscera, some being attached to the mesentery in situations far distant from the ovary. The left ovary was dropsical, but appeared otherwise unaffected. The large cyst, which was completely adherent to the abdominal parietes, was compound in character, there being various chambers opening one into another. In that portion which had been opened there still remained a small quantity of mortar-like material, mixed with much hair. This cavity opened into another, filled with similar contents. A third contained masses of material, fibrous in appearance, and forming a peculiar fenestrated structure. In this there was a circular patch of hair two or three inches in diameter, looking much like the crown of a fœtal head. There were also numerous teeth, bicuspid, canine and incisor. The cyst-wall generally was very thick—quite a quarter of an inch.

12. *Lacerations of the Uterus.* (Lancet, June 30, 1866.)

At a recent meeting of the Obsterical Society of London, Dr. Radford related minutely the histories of nineteen cases which had fallen under his notice. Of this number, in eleven the ages registered were from twenty-one to forty years, and it was found that the accident occurred more frequently between the ages of thirty-nine and forty. The number of labors which each woman had undergone varied from the first to the eleventh; and it was shown that laceration of the uterus happened most frequently in women pregnant for the eighth time, and that in those *enceinte* for the first time the accident took place quite as often as it did in any of the other cases which were registered. The duration of the labor from its commencement to the occurrence of laceration (though in some cases not exceeding three or four hours) was generally from ten to thirty hours. Of the various causes or conditions mentioned as producing laceration, slight contraction at the brim of the pelvis appeared to have been the most frequent. The author considered that when the form of the pelvis was only slightly contracted, the os and cervix uteri partially descended during labor into or a little through the aperture of the pelvis, so that, as the head of the infant was forced down, the uterine tissues became fixed between this body and the pelvic bones. The fixity of this structure actually formed a *point d'appui* from which the uterine fibres during contraction forcibly pulled; and the great probability was that sooner or later the tissue either directly tore, or, being first contused and softened, yielded. As regarded the situation of the laceration, the cervix uteri was the part most frequently affected, and sometimes with it the body of the organ was also implicated. In eleven cases the laceration was longitudinal, in three transverse, in three oblique, and in one circular. Of the nineteen cases, three recoveries took place, or nearly sixteen or seventeen per cent. Dr. Radford, in his concluding remarks, observed that when we contemplated the frequent fatality of laceration of the womb, we were led to inquire whether there were no symptoms which showed themselves as universal precursors of this dreadful catastrophe; and if there were, were we possessed of the means of prevention. In all the cases he now brought before the Society, there could not be found any with premonitory symptoms which *of themselves* would warrant any operative measures being taken in order to avert the impending danger. Nevertheless, he thought we should carefully consider all the contingent circumstances of protracted labors, and especially of those which were prolonged by mechanical impediments, and whether they were produced by relative disproportion of the capacity of the pelvis to the size of the fœtal head; if so, we should adopt measures of timely delivery.

Dr. Hewitt concurred in the opinion that there was an absence of uniformity of symptoms in these cases, and strongly urged the necessity for early artificial aid in some cases of protracted labor.

Dr. Playfair thought the best line of treatment in those cases where the fœtus had escaped into the peritoneal cavity would be to perform gastrotomy.

Dr. Braxton Hicks said it was generally asserted that recession of the head was a constant symptom of rupture of the uterus, but that he had never seen a case where this had taken place. He believed there were many more cases of ruptured uteri than we were cognizant of. Dr. Hicks believed that one of the greatest safeguards against rupture was the use of chloroform.

Dr. Eastlake observed that in the diagnosis of rupture of the uterus some data were furnished by auscultation, the fœtal heart-sounds becoming inaudible after the rupture. This point Dr. McClintock strongly insists upon, as also that in these cases there is very little hemorrhage.

The President, Dr. Barnes, considered the first great cause of rupture was protracted labor, and the object to be had in view was to remove the obstruction as speedily as possible. A second cause was rigidity of the os uteri, and he agreed with the author as to the necessity of incising the os. A third and fourth cause existed in the obliquity of the uterus, which caused it to become jammed in the pelvis; also, when there is a dead fœtus in utero there is a want of the resiliency which a live child possesses, and the action of the uterus rather tends to squash than to expel it. He also mentioned disease of the uterine tissue as another cause leading to rupture. He thought softening of the tissue might depend upon degeneration, either before labor or during labor, by the pressure of the fœtal head against the pelvis. With respect to gastrotomy, he would say that Dr. Radford had urged the operation, but that it had been overruled by others. The late President of the Society objected to any operative measures whatever when the fœtus had escaped into the abdominal cavity; and he (Dr. Barnes) had seen a case where it was left, and the woman recovered.

Dr. Brunton observed that the cases which Dr. Radford had collected were attended by midwives, and he knew that midwives were in the habit of giving very large doses of ergot. He believed that this was one of the great causes of rupture of the uterus, and when it did not cause rupture the placenta was often retained, owing to the irregular contractions of the uterus produced by that drug.

13. *Long Umbilical Cords a Source of Danger to the Life of the Fœtus.* (Edinburgh Medical Journal, April, 1866.)

"At the February Meeting of the Edinburgh Obstetrical Society, Dr. Inglis exhibited two umbilical cords, each over four feet long. They were taken from the same patient, the first one four years since, the other that morning. At both times the child died from strangulation of the cords previous to delivery. This recurrence, he said, was not uncommon, and had been mentioned by him at a meeting of the Royal Medical Society in 1858, when he showed a cord five feet and four inches in length, taken from a patient who had previously lost a child from the same cause. Since then this same patient has lost another child in the same manner." The frequency with which the child's life is endangered from coiling of the cord around the neck makes it desirable that this complication should be ascertained before the head is born. Dr. Haake—quoted in the British and Foreign Medical-Chirurgical Review, for January—says it may be done by examining with the finger, *per rectum.* The finger can easily be carried above the head so as to feel the cord and its pulsations.

14. *Dermoid Ovarian Tumor Escaping per Rectum.* (The Medical Mirror, London, March and April, 1866.)

A very unusual case is here reported by Mr. E. C. Garland, of Kingston. The patient came under Mr. G.'s care in September, 1860, supposing herself to be at that time five months advanced in pregnancy. She was a delicate subject, of strumous diathesis, suffering from debility, pain, with marked fullness in the left iliac region, had for some time past had diarrhœa, and a few days previous to Mr. G.'s visit passed, *per rectum*, a flesh-like substance which had all the appearance of a small bladder. Very little feces were passed, but large quantities of offensive purulent matter, amounting to pints, escaped per rectum. In the October following a large tuft of hair was found protruding from the anus, and this being removed an examination with the speculum disclosed an ulcerative opening through the rectum large enough to admit the finger. Some short time subsequently a considerable homogeneous mass, mixed with hair, passed; the purulent matter continuing in larger quantities for ten months. From this time her health improved, and the catamenia returned; but there always existed an impediment to the passage of the feces, and hair in small quantities was occasionally passed for a period of two years. At this time, June, 1863, a larger mass escaped, per rectum, attended with little pain but very considerable hemorrhage. This mass is described by Dr. Tyler Smith, who was in consultation on the case, viz.: "The external surface of the tumor consists of dermoid structure sprinkled with coarse hairs. Two large irregular teeth project from one part of the surface. Internally the mass is composed of fatty matter. It is probably part of a mass of similar formations, as seems evident from the extent of the discharge, and the hair passed by the rectum. Inflammation must have occurred in the cysts, followed by adhesion to the bowel, and the tumor must have passed by suppuration slowly into the rectum." No mention is made of the size of the tumor. Considerable difference of opinion as to diagnosis existed during the earlier portion of the time in which the patient manifested these symptoms, the balance of opinion being in favor of extra-uterine gestation, but this doubt was cleared by the examination of the tumor. The patient made a good recovery.

15. *Rupture of the Uterus.*

We have space only to give a brief summary of these cases.

Mr. J. Llewellen reports, in the *Australian Medical Journal*, January, 1864 (quoted in the *British Foreign and Medico-Chirurgical Review* for January, 1866), two cases. The first patient was in her third labor; delivery was affected by turning, the child being dead. A small bunch of intestines protruded externally after the placenta was delivered. The patient made a rapid recovery, it being only three weeks before she resumed her customary labor at the wash-tub. Time of labor not given. The rupture was in the middle of the posterior wall from cervix to fundus. The second patient was in her fourth labor, duration not given, and terminated fatally in 31 hours. The child was delivered by turning and saved. Rupture was not suspected until after fruitless search for the placenta. The rupture was in middle line from fundus through cervix, vagina and rectum, to within half an inch of the anus.

Dr. John Moir relates, in the *Edinburgh Medical Journal*, for October, 1865, a case of traumatic rupture. Gastrotomy was performed, and the patient died eight hours after the operation.

Dr. Gordon narrated a case, at the March meeting of the Edinburgh Obstetrical Society, of a woman in her eighth labor. Head presentation; child still-born, delivered by turning. Mother died in thirty-six hours after the delivery.

At the same meeting a note was read by Dr Keiller, of another case occurring in the practice of Dr. Vail, of New Brunswick. Patient in third pregnancy; head presentation. Child delivered by turning, after it had passed through the rupture into the abdominal cavity. Mother recovered, and was able to walk about in five weeks. It is not stated whether the child was saved.

Dr. Henderson also read an account of a similar case; woman in her fourth confinement; head presentation; child delivered, dead, from the abdominal cavity through the rupture in the anterior wall of the uterus; patient died on the fifth day. Dr. Henderson considers had gastrotomy been performed patient would have had a better chance of recovery.

Dr. E. M. Willett reports, in the *Memphis Medical and Surgical Monthly*, for March, 1866, a case. The woman was in her third labor; head presentation; gastrotomy was performed, and the mother recovered in a few weeks, after having had decided symptoms of septicemia; not stated whether the child lived.

16. *A Case of Lithopædion.* (British and Foreign Medical-Chirurgical Review, April, 1866.)

Dr. R. Wagner describes the dissection of a woman, aged sixty-eight, who had died suddenly. She had borne five children at twenty-four, and believed herself again pregnant, when she fell sick with typhus. During this illness the movements of the child ceased. Notwithstanding that the child had been retained twenty-nine years in the abdomen it was entire, although much contracted. It weighed 3½ lbs., and was of the size of a child's head. The soft parts were much dried; some bones showed strong calcification; the scalp and one ear had grown to the membranes. Whether the extra-uterine gestation was primary or secondary Dr. Wagner does not decide. The woman had rejected an offer of Cæsarian section twenty-nine years before.—*Arch. f. Heilk.*, 1865.

17. *Iodine in the Treatment of Uterine Leucorrhœa.* (The Lancet, Jan. 6, 1866.)

The treatment of leucorrhœa is a constant subject of difficulty and vexation to the medical practitioner. Although the use of various astringents will often effect improvement, yet this is seldom lasting, and the recurrence of the symptoms is a continual source of annoyance. We have lately observed a plan which is being pursued by Dr. Murray at the Great Northern Hospital, and which promises to be a very useful addition to our means of treatment in this very troublesome condition. Dr. Murray first ascertains, by means of the speculum, that the discharge proceeds from within the uterus. He then introduces a small, short-haired brush (much like that used for washing phials) by a screw-like motion, so that the thick phlegm-like layer on the uterine wall is swept off with every turn of the brush. When this reaches the fundus he steadily withdraws it, charged as it is with the mucous deposit. Its place is then taken by a gum-elastic catheter with several apertures, through which is injected a lotion consisting of one part of the compound tincture of iodine to two parts of water. The uterine wall is thoroughly washed with this. The muscular contraction which follows this injection is remarkable, the tube being tightly grasped, so that its reintroduction at the time is extremely difficult. Dr. Murray has reason, after an experience of many cases treated by this plan, to feel highly satisfied with its success.

In this connection the use of iodized cotton, suggested by Dr. Robert Greenhalgh, as an application to the cervix uteri in chronic inflammatory enlargements and thickenings, and in subinvolution, with or without congestion or induration of tissue, is of interest. It is prepared as follows: Two ounces of iodide of potassium and one ounce of iodine are dissolved in eight ounces of glycerine, in which solution eight ounces of cotton wool are thoroughly saturated and then carefully dried. It should be applied through a speculum directly to the cervix uteri, using the precaution of securing it properly by a silk thread, and should be kept in position in the vagina for from twenty-four to forty-eight hours. Dr. Greenhalgh claims for it the following advantages: It is light, clean and portable; produces no irritation; destroys all fœtor; is considerably stronger than the compound tincture of iodine; is more readily absorbed, and can be kept for a longer time in contact with the diseased tissues; and, moreover, it does not soil the linen like many of the suppositories and medicated appliances in use for uterine affections.

VARIA.

Politics in Science.—The American Dental Association, at its Annual Convention held in Boston during the past month, saw fit to enliven its proceedings by the introduction of an address from a somewhat prominent political ex-major-general of the army. In so far, perhaps, their conduct was not reprehensible, though questionable as a matter of good taste; while, at the same time, the connection between diseased teeth and decayed politicians is not readily apparent. But then a resolution of thanks was offered, closing with the wish that the gentleman who delivered the address had been in New Orleans to subdue the recent riots there. A violent discussion of a political nature followed, and the resolution was finally adopted by the largely preponderating vote of the Northern delegates. This proceeding has very naturally and properly elicited the most severe comment and rebuke from the partisan press of the country, and we, as representatives of a learned profession to which the association above mentioned is closely allied, should be derelict in our duty did we not add our earnest protest against this mingling of politics with science. Above all things, science and her handmaid religion should go unsullied in their fair fame by such degrading and corrupt complications, or else forever cease to lay claim to that exalted and praiseworthy position which intelligence and integrity in all ages have conceded to them.

This action of the convention is not only very extraordinary and uncalled for, but humiliating in the extreme; and the excuse put forth by certain of the delegates that the resolution—on which the discussion was based—was but an expression of the appreciation by the association of ability and loyalty, will not suffice. The association were under no more obligations to indorse the ability of Benjamin F. Butler than of Robert E. Lee, and there would have been as much sense and propriety in the one line of conduct as in the other; and whatever may be the political preferences of the members of the convention individually—whether they be loyal or disloyal, radical or conservative, matters not—the only loyalty that they in their capacity as members of the association were called upon to applaud, or were even themselves presumed to possess, was an allegiance to that honorable science whose claims they had met together to represent and discuss.

By this course of conduct they not only lost sight of that dignity and self-respect which should characterize the meetings of all purely scientific associations, but they transgressed the bounds of authority delegated to them by the various local societies which they represented; and these societies owe it to themselves and their honorable names to repudiate, promptly and emphatically, the action of the convention in thus converting their assembly into little better than a primary caucus of pot-house politicians.

Contributions for the Medical Volume to be Published under the Direction of the Sanitary Commission.—Our readers are doubtless aware that a series of volumes is to be published under the direction of the Sanitary Commission; the different volumes to be devoted respectively to a History of the Commission, to Hospitals, to Military Hygiene, to Surgery, and to Medicine. We are requested by the editor of the volume on Medicine to invite any who served as surgeons or physicians during the war, either at the North or South, to contribute articles relating to camp diseases. All articles received will be carefully examined, and, if incorporated in the work, due acknowledgment will be made to the authors. Articles relating to any of the diseases which prevailed in the armies of the United States or among the Confederate troops, will be gladly received. As the volume will be largely circulated, it will be a desirable medium for the diffusion of important facts and conclusions, based on the experience of those who held medical positions during the war. Articles should be sent, if possible, by the middle of September, or, at the furthest, by the first of October. They may be directed to the Medical Committee of the Sanitary Commission, No. 21 West 12th Street, New York City. Editors of Medical Journals are respectfully requested to insert this notice.

American Medical Association.—The Committtee of Publication have issued the following circular: "The Committee of Publication are obliged to appeal to the members of the American Medical Association for contributions of money to defray the expenses of printing and illustrating the transactions of the last meeting. The amount of assessments at the meeting in Baltimore falls short of that required by more than one thousand dollars, and unless this deficiency is supplied the volume cannot be published. Many members have expressed their willingness to contribute, and one has agreed to give a hundred dollars if there is any prospect of aid from others. You are earnestly requested to contribute, and to forward whatever amount you may be disposed to give to Dr. C. Wister, 1303 Arch Street, Philadelphia, Pa."

The Prize Essay Committee of this Association request that all communications to be submitted to them be sent to their chairman before the 15th day of March next, accompanied by a sealed envelope, containing the name and address of the authors. The Association offers two prizes, of one hundred dollars each, for the best two essays on any subject connected with the medical sciences. Chairman of the Committee, Dr. T. Donaldson, Baltimore, Md.

Hudson River Hospital for the Insane.—Under the law passed by the last Legislature of New York, authorizing the Governor to appoint Commissioners to select and contract for a suitable site on or near the Hudson, below the city of Albany, for a new State Hospital for the Insane, the Governor has appointed the following gentlemen: Hon. A. W. Palmer, Amenia, Dutchess Co.; Hon. Wm. S. Kenyon, Kingston, Ulster Co.; John Falconer, Esq., New York City; Dr. J. M. Cleaveland, Utica, Oneida Co.; Joseph B. Taylor, New York City.

State Hospital for the Insane in Connecticut.—The Connecticut Legislature have recently passed a law creating a State Hospital for the Insane, which is to cost $200,000.

A resolution has passed both Houses of Congress directing the Secretary of War to communicate a report of the medical statistics collected during the war in the Bureau of the Provost-Marshal General, by Surgeon J. N. Baxter, U. S. Vols., as soon as such report can be compiled and prepared for presentation by him.

Prof. Charles T. Chandler, of the Columbia College School of Mines, is appointed Professor of Chemistry in the New York College of Pharmacy.

DEMILT DISPENSARY.—Drs. Governeur M. Smith and William B. Bibbins have resigned their positions as Attending Physicians to the class of Diseases of the Head and Abdomen, and Drs. Thomas C. Chalmers and D. DeForrest Woodruff have been appointed to fill the vacancies thus created.

Mr. JOSEPH TOYNBEE, F.R.S., &c., the distinguished aural surgeon, died at his home, in London, on the 8th of July, under circumstances of the most painful interest. It appears that he had for some time past been in the habit of experimenting upon himself on the various means of introducing vapors and gases into the middle ear through the Eustachian tube, and he had contrived a mechanism for this purpose. This failing in its application, he tried the effects of forcing these medicinal agents through the Eustachian tube by the natural effort of closing the nostrils and mouth, and making a strong expiratory effort. He was found by an attendant lying on a sofa in his office, apparently asleep, but in reality dead, and near by him were some papers containing notes of the experiments he was making, and also three bottles—the first, containing rectified ether, had not been opened; a second had in it about half an ounce of hydrocyanic acid (Scheele's preparation); and the third had evidently contained chloroform, but when found was dry and free from smell. The verdict of the jury empaneled in the case was, "That the deceased met with his death accidentally, while prosecuting his experiments, by inhaling a combination of chloroform and prussic acid." Mr. Toynbee devoted himself exclusively to the study and practice of aural surgery, and he was perhaps the first in England to rescue this branch of the medical art from the ignorant and pretending quacks who had entirely monopolized it, and in it he had acquired a world-wide celebrity which needs no confirming words of ours. His practice was exceedingly lucrative, and at his death he was in affluent circumstances. His contributions to the literature of aural surgery were very large and valuable, numbering in all some sixty papers, in addition to his larger work "On Diseases of the Ear, their Nature, Diagnosis and Treatment," which is the acknowledged authority on this subject.

We cannot forbear quoting in this connection the following timely and very appropriate remarks from *The Lancet:*

"The most serious lesson to be deduced from the very painful and most lamentable catastrophe which has resulted from Mr. Toynbee's experiments upon himself, is the great danger of such individual self-sacrifice. It is not the first time that eminent members of our profession have, even lately, jeopardized their lives by trying experiments upon themselves with dangerous and poisonous substances, of which the doses and the effects had not previously been sufficiently ascertained by experiment upon the brute kingdom. Dr. Christison was very near killing himself in testing the effect of the recently introduced Calabar bean upon his own organism, and rather carelessly beginning with a large dose of the powdered bean. He was paralyzed and incapable of articulation, helpless, although conscious, and was as nearly face to face with death as a man well can be and yet escape its jaws. Sir James Simpson nearly fell a victim to his experiments with anæsthetics. There is something heroic and grand in such a death as that of Mr. Toynbee. He is truly a martyr to his earnestness of purpose and generous zeal for the advance of a beneficent art. No soldier in the line of battle, no saint steadfast in theological fidelity, ever lost his life in a purer or nobler cause. But heroism which involves such a sacrifice is only perfectly sanctified by a proved necessity; and although some risk must always be run by the original investigators who prove the effect of untried agents upon themselves, yet a risk so great as this might have been avoided; and in grieving over the fate of Mr. Toynbee, in exalting his self-sacrifice and his earnestness of purpose, we cannot omit to deduce from his sad though noble fate a caution which other investigators will hardly fail to take to heart."

THE SYDENHAM CLUB.—It is proposed to establish a medical club in London, to be called the Sydenham, which, besides securing to its resident members at a moderate cost all the advantages of a modern club, shall afford a common place of meeting for medical men from all quarters, who may be visiting the city, and enable them to enjoy the advantages of London professional society. Might not the profession in this city, the metropolis of the western world, adopt the plan both with advantage to themselves and as a courteous means of extending hospitality and favoring intercourse among our professional brethren from all sections of the country?

THE GOVERNMENTAL MEDICAL REPORTS OF FRANCE.—The important French Government Committee, appointed in 1862 to inquire into the hygiene and medical services of hospitals, have already published five valuable reports. The first, on Hospital Dietary, was drawn up by M. Payen; the next, on the Mortality of Puerperal Women, was written by Malgaigne; General Morin issued two reports on the Warming and Ventilation of Hospitals; and M. Devergie prepared the one on the Hygienic Conditions to be fulfilled in the Erection of Hospitals.

The Imperial Society of Bordeaux offers a gold medal of the value of 500 francs for an exhaustive memoir on the subject of embolism, especially in relation to the sudden deaths of puerperal women. The proportions of sudden death in different diseases, and especially in the puerperal state due to emboli, are to be duly set forth. The essays, written in French or English, are to be sent in by August 31, 1867.